19=Chevron TLV
 20=EPA Carcinogen
 21=TSCA Sect 4(e)

 22=TSCA Sect 5(a)(e)(f)
 23=TSCA Sect 6
 24=TSCA Sect 12(b)

 25=TSCA Sect 8(a)
 26=TSCA Sect 8(d)
 28=Canadian WHMIS

29=OSHA CEILING 99=TSCA Inventory updat

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data on the components.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 02/25/91 MSDS Number: 004523

PETROLEUM RESIN

CAS64742161

< 10.0 % CALCIUM COMPLEX THICKENER

ADDITIVES INCLUDING THE FOLLOWING

CARBON-BLACK

CAS1333864 3.5mg/m3 ACGIH TLV

3.5mg/m3 OSHA TWA

GRAPHITE

CAS7782425 2.5mg/m3 ACGIH TLV

5mg/m3 OSHA TWA

MOLYBDENUM DISULFIDE

CAS1317335

TLV - Threshold Limit Value TWA - Time Weighted Average STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: Immediate (Acute) Health Effects; NO 1.

> 2. Delayed (Chronic) Health Effects; NO

> 3. Fire Hazard; NO

> 4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

CARBON-BLACK

is found on lists: 02,10,11,14,17,28,

GRAPHITE

is found on lists: 02,10,11,14,17,

REGULATORY LISTS SEARCHED:

01=SARA 313 02=MASS RTK 03=NTP Carcinogen 06=IARC Group 1 04=CA Prop. 65 05=MI 406 07=IARC Group 2A 08=IARC Group 2B 09=SARA 302/304 12=CERCLA 302.4 10=PA RTK 11=NJ RTK 13=MN RTK 14=ACGIH TLV 15=ACGIH STEL 16=ACGIH Calculated TLV 17=OSHA TWA 18=OSHA STEL

Revision Number: 1 Revision Date: 02/25/91 MSDS Number: 004523

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Black grease.

BOILING POINT: NA
MELTING POINT: NA
EVAPORATION: NA
SPECIFIC GRAVITY: NDA
VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problem.

Clean up spills immediately, observing precautions in Protective Equipment section.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Open Gear Lubricant

CONTAINING

< 70.0 % LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547

Revision Number: 1 Revision Date: 02/25/91 MSDS Number: 004523 NDA - No Data Available NA - Not Applicable

RESPIRATORY PROTECTION:

No special respiratory protection is normally required.

VENTILATION:

No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed.

5. FIRE PROTECTION

FLASH POINT: (COC) 475F (246C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur and nitrogen. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 1 Revision Date: 02/25/91 MSDS Number: 004523

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INCESTION

Not expected to be an ingestion problem, no first aid procedures are required.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

Revision Number: 1 Revision Date: 02/25/91 MSDS Number: 004523



Material Safety Data Sheet

CHEVRON Open Gear Lubricant

CPS253812

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475 CO., INC. P O BOX 12570 PORTLAND, OR 97212

MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: July 26, 1991
This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to reflect name change from Chevron Open Gear Grease to current name.

1. PRODUCT IDENTIFICATION

CHEVRON Open Gear Lubricant

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS253812

PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 02/25/91 MSDS Number: 004523 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

```
NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street
Los Angeles, California. 90061
Emergency No. 1-800-535-5053 (INFOTRAC)
Call nearest Sales Office for MSDS Information
 MATERIAL SAFETY DATA SHEET
 SECTION 11 TIDENTIFICATION OF PRODUCT * " " " " " " " "
                                                                                                                                                                      Date Issued: "08/06/91
 Product Name: MARATHON"MAINTAINER
                                                                                                                                                                      Supercedes: NEW National Item#: 2193XX
SECTION 2. INGREDIENTS CAS NUMBER PERCENT EXPOSURE LIMITS IN AIR
#DIETHYLENE GLYCOL 111900 2 ESTABLISHED ESTABLISHED
                                                                                                                                                                                                                                     QTHER
   POLYETHOXYLATED NONYL PHENOL
                                                                                                                                                       NOT
ESTABLISHED ESTABLISHED
                                                                                               9016459
                                                                                                                                        2
 N/A = Not Applicable; N/D = Not Determined
*THESE MATERIALS ARE SUBJECT TO THE REPORTING REQUIREMENTS UNDER SARA TITLE III A SECTION 313 AND 40 CER PART 372.
SECTION 3. PHYSICAL DATA.

Boiling Point (F): 212

Vapor Pressure (mm Hg.): N/D

Vapor Density (Air=1): ND

Solubility in Water: 50LUBLE
Appearance and Odor: YELLOWISH GREEN/SWEET SCENT
Section 4. FIRE AND EXPLOSION HAZARD DATA
Flash Point (Test Method): NON-FLAMMABLE Flammable Limits: LEL=N/D UEL=N/D Extinguishing Media: CO2, DRY CHEMICAL, FOAM, WATER FOG
 Special Fire Fighting Procedures: NORMAL FIRE FIGHTING PROCEDURES MAY BE USED. COOL AND USE CAUTION WHEN APPROACHING OR HANDLING FIRE EXPOSED CONTAINERS.
Unusual Fire & Explosion Hazards: CONTAINERS MAY BURST IN HEAT.
 SECTION ST LREACTIVITY DATA TO THE SECTION STATE OF THE SECTION STATES OF THE SECTION OF THE SEC
 Stability: "STABLE
 Incompatibility # Materials to Avoid: NONE KNOWN TO NSS
 Hazardous Polymerization: WILL NOT OCCUR
 Conditions to Avoid: NONE KNOWN TO NSS
 Hazardous Decomposition Products: WHEN EXPOSED TO FIRE, PRODUCES NORMAL PRODUCTS OF COMBUSTION.
 SECTION TO SET LEAK AND DISPOSAL PROCEDURES.
SPILL Response: FORUSMALE SPILES. DIEUTE WITH WATER AND PICK UP WITH MOP AND PAIL OR WET PICK UP VACUUM, FOR LARGE SPILLS, DIKE AREA TO CONTAIN SPILL. CLEAN UP USING ABSORBENT MATERIAL PLACE ALL CONTAMINATED MATERIAL IN A CLOSED CONTAINER FOR DISPOSAL.

Product Disposal: WASTE FOR DILUTED PRODUCT MAY BE FLUSHED TO SEWER. UNDILUTED PRODUCT RECOVERED FROM SPILLS MAY BE SENT TO LICENSED DIPOSAL FACILITY TO BE DISPOSED OF IN ACCORDANCE WITH FEDERAL/STATE REGULATIONS AND LOCAL ORDINANCES. CONTAINER THOROUGHLY WITH WATER AND DISCARD IN REGULAR TRASH COLLECTION IF ALLOWED BY LOCAL, STATE AND FEDERAL REGULATIONS.
```



Material Safety Data Sheet

CHEVRON Gear Compound BP ISO 320

CPS255072

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475 CO., INC. P O BOX 12570 PORTLAND, OR 97212 MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: August 15, 1991
This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

1. PRODUCT IDENTIFICATION

CHEVRON Gear Compound EP ISO 320

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS255072

PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004709 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004709

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

. No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 421F (216C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004709

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark green viscous liquid.

BOILING POINT: NA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.90 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA VISCOSITY: 320 cSt @ 40C

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004709

100.0 % CHEVRON Gear Compound EP ISO 320

CONTAINING

> 97.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 3.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1. Immediate (Acute) Health Effects; NO

Delayed (Chronic) Health Effects; NO

3. Fire Hazard; NO

4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO

None of the components of this material are found on the regulatory lists shown below.

REGULATORY LISTS SEARCHED:

01=SARA 313	02≈MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	27=TSCA Sect 8(e)
28=Canadian WHMIS	29=OSHA CEILING	30=TSCA Sect 8 FYI

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004709

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0 Revision Date: 02/01/91 MSDS Number: 004709

NDA - No Data Available NA - Not Applicable

1



Material Safety Data Sheet

CHEVRON Open Gear Lubricant Grade 100 CB

CPS253815

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3907475 CO., INC. P O BOX 12570 PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: August 15, 1991
This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to update section 1 (Product Information), 3 (Immediate Health Effects) and 4 (Protective Equipment).

1. PRODUCT IDENTIFICATION

CHEVRON Open Gear Lubricant Grade 100 CB

CAUTION! - REPEATED AND PROLONGED BREATHING OF VAPOR OR CONTACT
WITH SKIN MAY BE HARMFUL
- KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS253815

PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If respiratory irritation or any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

Not expected to be an ingestion problem, no first aid procedures are required.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation.

DERMAL TOXICITY:

The dermal toxicity of this substance has not been determined. However, it may be slightly toxic to internal organs if absorbed through the skin. The degree of injury will depend on the amount absorbed.

RESPIRATORY/INHALATION:

The inhalation toxicity of this substance has not been determined. However, it may be slightly toxic to internal organs if inhaled. The degree of injury will depend on the airborne concentration and duration of exposure. The target organ(s) is the nervous system. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing. This hazard evaluation is based on the known toxicity of the ingredients in this substance. Read the Additional Health Data section (12) of this document for more information.

ingestion :

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

If operating conditions result in airborne mists or vapors of this material, the use of an approved respirator is recommended.

VENTILATION:

No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed.

5. FIRE PROTECTION

FLASH POINT: (COC) 580F (325C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NDA Upper: NDA EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur and nitrogen. Incomplete combustion can produce carbon monoxide. Combustion may produce toxic compounds of chlorine.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

The solvent may thermally decompose to toxic phosgene gas and corrosive hydrochloric acid.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729

INCOMPATIBILITY:

The solvent reacts violently with alkali and with various metal powders. SPECIAL PRECAUTIONS:

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed. DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Black grease with chloroform-like odor.

BOILING POINT: NA MELTING POINT: NA EVAPORATION: NA SPECIFIC GRAVITY: NDA

VAPOR PRESSURE: NDA

PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): NDA

VISCOSITY: 410 cSt @ 40E (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problem.

Clean up spills immediately, observing precautions in Protective Equipment section.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729

100.0 % CHEVRON Open Gear Lubricant Grade 100 CB

CONTAINING

< 35.0 % RESIDUAL OILS SOLVENT DEWAXED

CAS64742627

< 35.0 % RESIDUES VACUUM

CAS64741566

> 10.0 % PETROLEUM RESIN

CAS64742161

20.0 % 1,1,1-TRICHLOROETHANE

CAS71556 A toxic chemical subject to the reporting requirements of

Section 313 of Title III of the Superfund Amendments and

Reauthorization Act of 1986 and 40 CFR Part 372.

350ppm ACGIH TLV 450ppm ACGIH STEL 350ppm OSHA TWA 450ppm OSHA STEL

CERCLA 302.4 RQ=1000 POUNDS

< 2.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NDA DOT HAZARD CLASS: NDA

DOT IDENTIFICATION NUMBER: NDA

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; YES

2. Delayed (Chronic) Health Effects; YES

Fire Hazard; NO

4. Sudden Release of Pressure Hazard; NO

5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

1,1,1-TRICHLOROETHANE

is found on lists: 01,02,10,11,12,14,15,17,18,21,24,26,28,

REGULATORY LISTS SEARCHED:

01=SARA 313

02=MASS RTK

03=NTP Carcinogen

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729

04=CA Prop. 65 05=MI 406 06=IARC Group 1 07=IARC Group 2A 08=IARC Group 2B 09=SARA 302/304 10=PA RTK 11=NJ RTK 12=CERCLA 302.4 13=MN RTK 14=ACGIH TLV 15=ACGIH STEL 16=ACGIH Calculated TLV 17=OSHA TWA 18=OSHA STEL 19=Chevron TLV 20=EPA Carcinogen 21=TSCA Sect 4(e) 22=TSCA Sect 5(a)(e)(f) 23=TSCA Sect 6 24=TSCA Sect 12(b) 25=TSCA Sect 8(a) 26=TSCA Sect 8(d) 28=Canadian WHMIS 29=OSHA CEILING

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data on the components.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains 1,1,1-trichloroethane which is considered to be of low acute and chronic toxicity by ingestion or by skin absorption. Inhalation of vapors at concentrations above the exposure standard has an anesthetic effect, producing signs and symptoms of central nervous system depression which may include headache, dizziness, nausea, fainting and respiratory depression. Concentrations of 900 to 1000 ppm have produced temporary impairment of coordination. Obvious disturbances of equilibrium accompanied by headache and lassitude have been observed in humans at concentrations above 1700 ppm. 1,1,1-Trichloroethane may also produce transient alterations in heart function such as decreased blood pressure and erratic heart beat. Note to Physician: 1,1,1-Trichloroethane can sensitize the myocardium to catecholamine—induced arrhythmias.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729

Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 04/25/91 MSDS Number: 004729



Material Safety Data Sheet

CHEVRON Open Gear Lubricant Grade 250 CB

CPS253817

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: August 15, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

1. PRODUCT IDENTIFICATION

CHEVRON Open Gear Lubricant Grade 250 CB

CAUTION! - PROLONGED OR REPEATED SKIN CONTACT CAN BE HARMFUL

- VAPOR HARMFUL

- KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS253817

PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If respiratory irritation or any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

Not expected to be an ingestion problem, no first aid procedures are required.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

SKIN IRRITATION:

Expected to cause no more than minor skin irritation, but prolonged or frequently repeated skin contact may be harmful. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on the known toxicity of the ingredients in this substance.

RESPIRATORY/INHALATION:

The inhalation toxicity of this substance has not been determined. However, it may be slightly toxic to internal organs if inhaled. The degree of injury will depend on the airborne concentration and duration of exposure. The target organ(s) is the nervous system. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing. This hazard evaluation is based on the known toxicity of the ingredients in this substance. Read the Additional Health Data section (12) of this document for more information.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730

hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

Unless ventilation is adequate to keep airborne concentrations below recommended exposure standards, approved respiratory protection should be worn.

VENTILATION:

No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed.

5. FIRE PROTECTION

FLASH POINT: (COC) 580F (325C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NDA Upper: NDA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 1; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire

document and label before using this product. FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur and nitrogen. Incomplete combustion can produce carbon monoxide. Combustion may produce toxic compounds of chlorine

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

The solvent may thermally decompose to toxic phosgene gas and corrosive hydrochloric acid.

STABILITY:

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

The solvent reacts violently with alkali and with various metal powders.

SPECIAL PRECAUTIONS:

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed. DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Black grease with chloroform-like odor.

BOILING POINT: NA
MELTING POINT: NA
EVAPORATION: NA
SPECIFIC GRAVITY: NDA
VAPOR PRESSURE: NDA

VAPOR PRESSURE: NDA
PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): NDA

VISCOSITY: 937 cst @ 40c (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problem.

Clean up spills immediately, observing precautions in Protective Equipment section.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730

the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Open Gear Lubricant Grade 250 CB

CONTAINING

< 15.0 % RESIDUAL OILS SOLVENT DEWAXED

CAS64742627

< 60.0 % RESIDUES VACUUM

CAS64741566

< 10.0 % PETROLEUM RESIN CAS64742161

< 20.0 %

1,1,1-TRICHLOROETHANE

CAS71556 A toxic chemical subject to the reporting requirements of

Section 313 of Title III of the Superfund Amendments and

Reauthorization Act of 1986 and 40 CFR Part 372.

350ppm ACGIH TLV 450ppm ACGIH STEL 350ppm OSHA TWA 450ppm OSHA STEL

< 2.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NDA DOT HAZARD CLASS: NDA

DOT IDENTIFICATION NUMBER: NDA

SARA 311 CATEGORIES:

- 1. Immediate (Acute) Health Effects; YES
- 2. Delayed (Chronic) Health Effects; YES
- Fire Hazard; NO
- 4. Sudden Release of Pressure Hazard; NO
- Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

1,1,1-TRICHLOROETHANE

is found on lists: 01,02,10,11,14,15,17,18,21,24,26,28,

REGULATORY LISTS SEARCHED:

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730

01=SARA 313 02=MASS RTK 03=NTP Carcinogen 04=CA Prop. 65 05=MI 406 06=IARC Group 1 07=IARC Group 2A 08=IARC Group 2B 09=SARA 302/304 10=PA RTK ll=NJ RTK 12=CERCLA 302.4 13=MN RTK 14=ACGIH TLV 15=ACGIH STEL 16=ACGIH Calculated TLV 17=OSHA TWA 18≃OSHA STEL 19=Chevron TLV 20=EPA Carcinogen 21=TSCA Sect 4(e) 22=TSCA Sect 5(a)(e)(f) 23=TSCA Sect 6 24=TSCA Sect 12(b) 25=TSCA Sect 8(a) 28=Canadian WHMIS 26=TSCA Sect 8(d) 29=OSHA CEILING

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data on the components.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains 1,1,1-trichloroethane which is considered to be of low acute and chronic toxicity by ingestion or by skin absorption. Inhalation of vapors at concentrations above the exposure standard has an anesthetic effect, producing signs and symptoms of central nervous system depression which may include headache, dizziness, nausea, fainting and respiratory depression. Concentrations of 900 to 1000 ppm have produced temporary impairment of coordination. Obvious disturbances of equilibrium accompanied by headache and lassitude have been observed in humans at concentrations above 1700 ppm. 1,1,1-Trichloroethane may also produce transient alterations in heart function such as decreased blood pressure and erratic heart beat. Note to Physician: 1,1,1-Trichloroethane can sensitize the myocardium to catecholamine-induced arrhythmias.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730

have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004730



Material Safety Data Sheet

CHEVRON SRI Grease NLGI 2

CPS254504

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475 CO., INC. P O BOX 12570 PORTLAND, OR 97212 MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: August 15, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

1. PRODUCT IDENTIFICATION

CHEVRON SRI Grease NLGI 2

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS254504

PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004753

NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (415)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Note to Physician: Injection under the skin of materials similar to this product is associated with accidents involving high-pressure equipment. When ejected from this type of equipment, the material can easily penetrate the skin and leave a small, sometimes bloodless, puncture wound. Yet, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain in the affected part. Immediate treatment at surgical emergency center is recommended.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. May cause skin discoloration. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

RESPIRATORY/INHALATION:

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004753

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required.

VENTILATION:

No special ventilation is necessary.

5. FIRE PROTECTION

FLASH POINT: NDA AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of nitrogen. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004753

NDA - No Data Available NA - Not Applicable

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbons; insoluble in water.

APPEARANCE: Green grease.

BOILING POINT: NA MELTING POINT: NDA EVAPORATION: NA

SPECIFIC GRAVITY: 0.92 @ 20/20C VAPOR PRESSURE: <1 mm Hg @ 40C PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): MA

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control

Revision Number: 0 Revision Date: 02/09/91 MSDS Number: 004753

Act Chemical Substances Inventory.

This substance is subject to the provisions of the Pennsylvania Worker and Community Right-to-Know Act. Specific chemical identities are trade secret under the provisions of 35 Pennsylvania Statute Section 7311.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON SRI Grease NLGI 2

CONTAINING

> 85.0 % DISTILLATES, HYDROTREATED HEAVY PARAFFINIC CAS64742547

< 15.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity
RO - Reportable Quantity CPS - CUSA Product Code

- Reportable Quantity CPS - CUSA Product Code

- Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: l. Immediate (Acute) Health Effects; NO

> 2. Delayed (Chronic) Health Effects; NO

> 3. Fire Hazard; NO

> 4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO

None of the components of this material are found on the regulatory lists shown below.

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	ll=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS

MSDS Number: 004753 Revision Number: 0 Revision Date: 02/09/91

29=OSHA CEILING

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils refined by a combination of severe hydrocracking and hydrotreating. The potential of paraffinic base oil prepared by this process to cause cancer has not been specifically addressed by the OSHA Hazard Communication Standard (29 CFR 1910.1200), the International Agency for Research on Cancer (IARC), nor the National Toxicology Program (NTP) Annual Report. However, the process conditions, chemical analyses, and the results of mutagenicity tests all support our opinion that this oil should not cause skin cancer.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Date: 02/09/91 MSDS Number: 004753 Revision Number: 0 NDA - No Data Available



MATERIAL SAFETY DATA SHEET

05-01-300

EFFECTIVE AUGUST, 1991

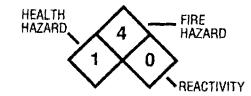
Suburban Propane P.O. Box 206 Whippany, NJ 07981

TRANSPORTATION EMERGENCY NO.

CHEMTREC NO. (800) 424-9300

GENERAL INFORMATION: SAFETY DEPT. (201) 887-5300

DANGER! Extremely flammable liquefied gas under pressure. Keep away from heat, sparks, flame, and all other ignition Vapor reduces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air and may collect at low levels. Liquid may cause freeze burn similar to frostbite. Do not get liquid in eyes, on skin, or on clothing. Avoid prolonged breathing of vapor. Keep container valve closed when not in use.



4 - Severe

3 - Serious

1 - Slight

2 ~ Moderate

0 - Minimal

SECTION 1 - IDENTIFICATION

PRODUCT:

Commercial Propane

CHEMICAL FAMILY:

Paraffinic Hydrocarbon

SYNONYMS: Liquefied Petroleum Gas; LP-Gas; LPG

CHEMICAL FORMULA:

C3H8

SECTION II - INGREDIENTS

MATERIAL	CAS NUMBER	PERCENT
ETHANE	74-84-0	0-5.0
PROPANE	74-98-6	87.5-100
PROPYLENE	115-07-1	0~5.0
BUTANES	Various	0~2.5
DOLVIARO	75-08-01	0-50 ppm

ETHYL MERCAPTAN

SECTION III - HEALTH INFORMATION

Asphyxiant in high concentrations due to dilution of available oxygen. At excessive INHALATION: vapor concentrations, this product has anesthetic, asphyxiating properties and may cause sleepiness.

At levels above 100,000 ppm (i.e. 10%), propane is mildly irritating to the respiratory tract and may result in dizziness, headache, drowsiness, nausea, shortness of breath, muscular incoordination, excessive salivation, disorientation, vomiting, and excitation. In extreme cases, convulsions, unconsciousness and death may occur as a result of asphyxiation. Persons with chronic respiratory disease should avoid exposure.

INGESTION: Liquid may cause freeze burn Ingestion not expected similar to frostbite. to occur in normal use.

SKIN CONTACT: Liquid may cause freeze burn similar to frosbite.

EYE CONTACT: Liquid may cause freeze burn similar to frostbite.

OTHER: Product is not listed by IARC, NTP or OSHA as a potential carcinogen. Propane and some of the minor components have been reported to be cardiac sensitizers in experiments.

SECTION IV - OCCUPATIONAL EXPOSURE LIMITS

[<u>4</u> 4	MATERIAL	PEL/TWA	TLV/TWA
D	ETHANE	Not Established	Simple Asphyxiant
	PROPANE	1000 ppm	Simple Asphyxiant
	PROPYLENE	Not Established	Simple Asphyxiant
	PROFILENC	800 ppm	800 ppm
	BUTANES	eug ppm	and blank

SARA TITLE III INFORMATION:

This product may contain over 1.0% propylene. This is subject to the reporting requirements of Section 313.

HAZARD CATEGORY FOR SECTION 311/312 REPORTING:

Immediate (acute) health hazard. Fire hazard. Sudden release of pressure hazard.

RCRA INFORMATION:

This product, when disposed of by incineration or flaring, is defined as an ingnitable hazardous waste in Federal regulations. Hazardous waste number is D001. Refer to latest Federal or State regulations regarding proper means of disposal.

TSCA STATUS:

All components of this product are listed on the TSCA inventory.

SECTION XII - HANDLING AND STORAGE PRECAUTIONS

Store in an authorized location (outside, detached storage is preferred with adequate ventilation. Isolate from heat and ignition sources. Isolate from combustible materials. Provide separate storage locations for other compressed or flammable gases. Inspect cylinders frequently for leaks, dents, gouges and corrosion with emphasis on bottom of cylinder. Store cylinders in upright position or with pressure relief valves in vapor space. Do not drop or abuse cylinders. Keep container valve closed and plugged when not in use. Install protective caps when cylinders are not connected for use. Empty containers retain some residue, so they should be treated as if they wete full.

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which the company bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

PREPARED BY: Regulatory Department

ISSUED:

08/91 05/90

P.O. Box 206

SUPERSEDES:

Whippany, NJ 07981

8-3-92, #59941, michael



MATERIAL SAFETY DATA SHEET

05-01-300

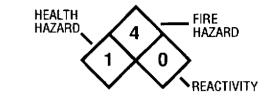
EFFECTIVE AUGUST, 1991

Suburban Propane P.O. Box 206 Whippany, NJ 07981

TRANSPORTATION CHEMTREC NO. EMERGENCY NO-(800) 424-9300

GENERAL INFORMATION: SAFETY DEPT. (201) 887-5300

DANGER! Extremely flammable liquefied gas under pressure. Keep away from heat, sparks, flame, and all other ignition sources. Vapor reduces oxygen available for breathing and may cause suffocation in confined spaces. Use only with adequate ventilation. Odor may not provide adequate warning of potentially hazardous concentrations. Vapor is heavier than air and may collect at low levels. Liquid may cause freeze burn similar to frostbite. Do not get liquid in eves, on skin, or on clothing. Avoid prolonged breathing of vapor. Keep container valve closed when not in use.



4 - Severe 3 - Serious

2 - Moderate

1 - Slight 0 - Minimal

SECTION I - IDENTIFICATION

PRODUCT: Commercial Propane

CHEMICAL FAMILY:

Paraffinic Hydrocarbon

SYNONYMS: Liquefied Petroleum Gas; LP-Gas; LPG

CHEMICAL FORMULA:

C3H8

SECTION II - INGREDIENTS

MATERIAL	CAS NUMBER	PERCENT
ETHANE	74-84-0	0-5.0
PROPANE	74-98-6	87.5-100
PROPYLENE	115-07-1	0-5.0
BUTANES	Various	0-2.5
ETHYL MERCAPTAN	75-08-01	0-50 ppm

SECTION III - HEALTH INFORMATION

Asphyxiant in high concentrations due to dilution of available oxygen. At excessive vapor concentrations, this product has anesthetic, asphyxiating properties and may cause sleepiness. At levels above 100,000 ppm (i.e. 10%), propane is mildly irritating to the respiratory tract and may result in dizziness, headache, drowsiness, nausea, shortness of breath, muscular incoordination, excessive salivation, disorientation, vomiting, and excitation. In extreme cases, convulsions, unconsciousness and death may occur as a result of asphyxiation. Persons with chronic respiratory disease should avoid exposure.

INGESTION: Liquid may cause freeze burn similar to frostbite. Ingestion not expected to occur in normal use.

EYE CONTACT: Liquid may cause freeze burn similar to frostbite.

SKIN CONTACT: Liquid may cause freeze burn similar to frosbite.

OTHER: Product is not listed by IARC, NTP or OSHA as a potential carcinogen. Propane and some of the minor components have been reported to be cardiac sensitizers in experiments.

SECTION IV - OCCUPATIONAL EXPOSURE LIMITS

MATERIAL	PEL/TWA	TLV/TWA
ETHANE	Not Established	Simple Asphyxiant
PROPANE	1000 ppm	Simple Asphyxiant
PROPYLENE	Not Established	Simple Asphyxiant
BUTANES	800 ppm	800 ppm

SECTION V - EMERGENCY AND FIRST AID PROCEDURE

FOR OVEREXPOSURE BY:

EYE CONTACT:

INHALATION Remove victim from further exposure and into fresh air. Provide oxygen if breathing is difficult. If victim is unconscious, get prompt medical attention.

For contact with liquid, flush immediately with water. Obtain immediate medical attention.

INGESTION: If swallowed, get immediate medical attention.

SKIN CONTACT: If freeze burn occurs, remove contaminated clothes, shoes and jewlery. Immerse burned area in warm (not hot) water. Keep immersed. Get prompt attention.

SECTION VI - PHYSICAL DATA

-44 F

N/A

BOILING POINT:

MELTING POINT:

VAPOR PRESSURE: 196 psig @ 100 F

SPECIFIC GRAVITY (H20 = 1): 0.504 VAPOR DENSITY (AIR = 1): 1.50

SOLUBILITY IN WATER: Slight, 0.1 to 1.0%

APPEARANCE AND ODOR: Colorless, odorless in natural form.

ODORANT WARNING

Odorant is added to aid in detection of leaks. One common odorant is ethyl mercaptan, CAS No. 75-08-1. Odorant has a foul, skunk like odor. The odorant is effective in most instances, but not everyone can smell the odor. The ability of people to detect odors varies widely. Also, certain chemical reactions with material in the propane system can reduce the propane odor level. No odorant will be 100% effective in all circumstances. If odor level appears to be weak, notify propane supplier immediately.

SECTION VII - FIRE AND EXPLOSION HAZARDS

FLASH POINT & METHOD USED:

-156 F (estimated)

IGNITION TEMPERATURE IN AIR:

920 - 1,120 F

FLAMMABLE LIMITS IN AIR, % BY VOLUME:

LOWER: 2.2% UPPER: 9.6%

NFPA RATING (Under Fire Conditions. Does not apply to exposure hazards

other than during fire): HEALTH:

1 Slightly toxic

FIRE:

4 Extremely flammable

REACTIVITY:

0 Stable

FIRE FIGHTING PROCEDURES:

Eliminate sources of ignition. Evacuate area. Notify fire department. Allow only trained, properly protected personnel in area. Shut off source of gas, if possible. Allow fire to burn itself out after gas flow is shut off. If gas flow cannot be shut off, do not extinguish fire. Allow fire to burn itself out using high volume water supply to cool heat-exposed pressure containers and nearby equipment. Approach a flame enveloped container from the side, never the head ends. Use extreme caution when applying water to a container which has been exposed to heat or flame for more than a short time. For uncontrollable fires and when flame is impinging on container, withdraw all personnel and evacuate vicinity immediately.

USUAL FIRE & EXPLOSION HAZARDS:

Firefighters should wear self-contained breathing apparatus in the positive pressure mode with a full facepiece when there is a possibility of exposure to smoke, fumes or hazardous decomposition products. Uncontrolled vapors spread rapidly, are heavier than air and are extremely flammable.

SECTION VIII - REACTIVITY

STABILITY:

Stable

HAZARDOUS POLYMERIZATION:

Will not occur

CONDITIONS & MATERIALS TO AVOID:

Keep away from high heat, sparks, open flame,

strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS:

Incomplete combustion may yield carbon monoxide,

a toxic gas.

SECTION IX - EMPLOYEE PROTECTION

CONTROL MEASURES:

Use local and dilution ventilation to maintain exposures below acceptable criteria.

RESPIRATORY PROTECTION:

If concentrations are high enough to warrant supplied-air or self-contained breathing apparatus, atmosphere may be flammable (see Section VII). Appropriate precautions must be taken regarding flammability. For situations where flammability has been safely addressed and where control measures are not feasible or sufficient to achieve full conformance with acceptable criteria (Section IV), use NIOSH/MSHA approved respiratory protection (supplied-air or self-contained breathing apparatus as appropriate). Respirators should be selected based on form and concentration of contaminant in air and in accordance with OSHA (29 CFR 1910.134).

PROTECTIVE CLOTHING

Avoid skin contact with liquid because of possibility of freeze burn. Wear gloves and protective clothing which are impervious to the product for the duration of the anticipated exposure.

EYE PROTECTION:

Use chemical safety goggles meeting the specifications of ANSI Z87.1 when connecting or disconnecting lines under pressure. Spectacle type safety glasses do not provide satisfactory protection.

SECTION X - ENVIRONMENTAL PROTECTION

ENVIRONMENTAL EFFECTS:

Avoid uncontrolled releases of this material. Liquid release will have possible effect on plant and animal life. Large liquid release will quickly vaporize to produce a large, vapor cloud. Vapor cloud is both a fire and asphyxiation hazard.

SPILL OR LEAK PROCEDURES:

Product is extremely flammable. Vapor is heavier than air and may collect at lower levels. Flammable concentrations may be present below nose level. If there is a leak but no fire, do not ignite the escaped gas. Eliminate all ignition sources. Do not smoke, use a nearby phone or turn electrical switches on and off. Evacuate area. If possible, remove leaking container to safe area. Stop flow of gas or allow vapor to disperse in a safe area. Water spray can be used to help dilute vapor concentration in air.

WASTE DISPOSAL:

Dispose of gas in accordance with applicable laws and regulations. Vent vapor in a safe location and insure that gas dissipates below the lower flammable limit. Controlled burning is preferred.

SECTION XI - REGULATORY INFORMATION

DOT PROPER SHIPPING NAME:

Liquefied Petroleum Gas

DOT HAZARD CLASS:

Flammable Gas

DOT I.D. NUMBER:

UN 1075

DOT EMERGENCY RESPONSE GUIDE:

See Guide No. 22

HMIS RAT	ING
Health	1
Flammability	1
Reactivity	0

Мёга нас	ıng
Health	ľ
Flammability	1
Reactivity	n



	·											
PRODUCT NAME: BLUE GASKET	- <u></u>	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.										
Section I												
Manufactured For:		Emergency Telepho	one Number									
DYNACCO, INC.		CALL CHEM		255-3924	,							
Address (Number, Street, City, State, and ZIP Co	ce)	Telephone Number										
17461 147TH ST S.E.		(360) 794. Date Prepared	-8974									
MONROR, WA. 98272		OCT 11, 19	991	<u> </u>								
ection II - Hazardous Ingredients/Identity Info	rmation											
azardous Components (Specific Chemical Identif	ly, Common Names(s))	OSHA PEL	ACGIH TLV	STEL	· %(optiona							
Methyltriacetoxysilane (4253-34	-3)	SEEB	ELOW		2							
Ethyltriacetoxysilane (17689-77	-9)	SEE 8	<u> ZLOW</u>		2							
Silica (7631-86-9)		<u>20mpocf</u>	10ma/m³		9							
Polymer (70131-67-8)		-	_	-	87							
All chemical compounds marked with an Asterisk (fund Amendments and Reauthorization Act (SAR) product is sold. This statement must remain a pa	A) of 1986 and 40 CFA i	Part 372. You must r	ng requirements of Sec notify each person to w	tion 313 of 113 thom this mixtu	e III of the Supe							
ection III - Physical/Chemical Characteristics												
esting Point Range	Na	Specific Gravity (Hz	0=:)		1.04							
apor Pressure PSIG @ 70°F	66	Melting Point PH	Liquid	1	NĄ							
apor Density (AIR = 1) Heavier than Air	NA	Evaporation Rate (Butyl Acetate = 1) <1										
olubility in Water , NIL		Appearance and Odor Blue Paste/Slight Medicinal Odor										
ection IV · Fire and Explosion Hazard Data												
lash Point (Method Used) 212°F TCC		Flammable Limits	ĻĒ	EL II	JEL ND							
uishing Media, Use water log, dry chemical,	or carbon dioxide			t-								
pecial Fire Fighting Procedures	than heated											
cans may rupture w Inusual Fire and Explosion Hazards		<u> </u>										
Heated cans may burst	SiO ₂ , cO ₂	_										

pection viringo	HAITA POLO			BLUE GASKET							
Stability	Unstable		Conditions to Avoid								
	Stable	X	High Temperatures								
Stability Unstable X High Temperatures Incompatibility (Materials to Avoid X Hardroom X Hardroom											
Hazardous Deco	mposition or Bypro	ducts		<u> </u>							
)2, <u>c</u>									
			35								
	Will not Occur	X	None								
Section VI - Hea	Ith Hazard Data										
Route(s) of Entry		Inha	ulation? Yes	Skin?							
Health Hazards (No injury	Acute and Chronic from silica) dust	should occur durin	g reas	onable use.	If use creates respirable					
particles	, some respir	ator	y systems injury ma	у осси	r. This pro	duct, as with any chemical					
may enhan	ce allergic o	ondi	tions in certain pe	ople.	No know chro	onic health effects, but					
unnecessa	ry exposure 1	to an	y chemical should b	e avoi	ded. Cured :	sealant is non-hazardous.					
Carcinogenicity:				ARC Mond	ographs?	OSHA Regulated?					
 	Presently not on	any sis	<u>. </u>								
			•		· · · · · · · · · · · · · · · · · · ·						
						;					
exposure (<u>may irritate</u>	nose	, throat and eyes s	s may serious	cause digest <u>ly with mode</u> r	rate corneal injury and					
		14261	ng a week of more.								
		,,	ONE KNOWN.								
Emergency and finds Flush eyes	irst Aid Procedure s and skin w	s ith w	ater for 15 minutes	. Rem	ove to fresh	air.					
Section VII - Pre	cautions for Safe	Hand	ling and Use		 						
Steps to be Take	n in Case Material	is Rela	esed or Spilled:	al	· ·	-4.1					
Waste Disposal N	/ielhod										
Dispose in	accordance Taken in Handlin	with	local, state and f	ederal_	requiations.						
•	Keep away from I	neat, sp	parks, or open flame. Store a								
Other Precaution	is When spraying i	more th	an one half can continuous	ly or more	than one can cons	secutively, više NIOSH approved respirator.					
SectionVIII - Co	ntrol Measures				<u> </u>						
	ection (Specify Typ		apparatus if above TLV limit	evceeding	·····						
Ventilation	Local Exhaust				Special						
	Mechanical (Gen		es		Other	tone					
Protoctive Cierra		N	one	1 5 5	•	lone '_					
Protective Gloves	s None required if s	prayin	9	Eye Pr	otection Wear ey	ye protection					
Other Protective	Clothing or Equiportion		nts								
Work/Hygiegic B			hile using Wash hands alter		· · · · · · · · · · · · · · · · · · ·						

HMIS RATING										
Health	1_									
Flemmability	1									
Reactivity	0									

NerA dauny Health							
1							
0							



RED GASKET					ot applicable, or no ked to indicate that.
Section I					
Manufactured For:	<u> </u>	Emergency Telephone	Number	<u> </u>	
DYNACCO, INC.		CALL CHEM-		255~39	24
Address (Number, Street, City, State, and ZIP	•	Telephone Number for			
17461 147TH ST S.E.		(360) 794-89 Date Prepared	974		
MONROE, WA. 98272		OCT 11, 199	1	•	
Section II - Hazardous Ingredients/Identity Inf	ormation				
Hazardous Components (Specific Chemical Ident	ity, Common Nam	es(s)) OSHA PEL	ACGIH TLV	STEL	%(options
Nethyltriacetoxysilane (4253-34	4-3)	SEE BE	LOW		2
Ethyltriacetoxysilane (17639-77	7-9)	S E E B E	LOW	<u> </u>	2
Silica (7631-86-9)		20moocf	10mg/m³		9
Polymer (7-131-67-8)			_		66
Iron Oxide (1309-37-1)		10mg/m ³	5mg/m³		1
1					-
Observe limits for Acetic Acid	formed duri	na curina unon expos	sure to wat	er or bu	mid air
OSHA PEL - TWA 10ppm, ACGIH TLV			, u. c. uu uu	<u> </u>	
		n, site ipponi.			
		•			•.
Outer compartment contains a fl	ammahle hydr	rocarbon propellant	(Propage/I	sobutane	/n-Butane ble
Outer compartment contains a fl	ammable hydi	rocarbon propellant	(Propane/I	sobutane	/n-Rutane_ble
	*) are toxic chemic 4) of 1986 and 40 (als subject to the reporting re	quirements of Sc	ection 313 of	Title III of the Supe
*All chemical compounds marked with an Asterisk (fund Amendments and Reauthorization Act (SAR) product is sold. This statement must remain a part.	*) are toxic chemic 4) of 1986 and 40 (als subject to the reporting re	quirements of Sc	ection 313 of	Title III of the Supe
"All chemical compounds marked with an Asterisk ("fund Amendments and Reauthorization Act (SAR/product is sold. This statement must remain a particular action III - Physical/Chemical Characteristics	are toxic chemic) of 1986 and 40 (rt of this Material	als subject to the reporting re	quirements of Si each person to	ection 313 of	Title III of the Supe ixture or trade nam
*All chemical compounds marked with an Asterisk (fund Amendments and Reauthorization Act (SAR/product is sold. This statement must remain a particular particular action III - Physical/Chemical Characteristics Boiling Point Range	*) are toxic chemic 4) of 1986 and 40 (als subject to the reporting red CFR Part 372, You must notify Safety Data Sheet.	quirements of Si each person to	ection 313 of whom this m	Title III of the Supe
*All chemical compounds marked with an Asterisk (fund Amendments and Reauthorization Act (SAR) product is sold. This statement must remain a particular particular of the product is sold. This statement must remain a particular of the product is sold. This statement must remain a particular of the product is sold. This statement must remain a particular of the product is sold. The prod	e) are toxic chemic a) of 1986 and 40 or of this Material	als subject to the reporting recEFR Part 372. You must notify Safety Data Sheet. Specific Gravity (H2O = Melting Point PH Evaporation Rate	quirements of Si each person to	ection 313 of whom this m	Title III of the Superixture or trade name
*All chemical compounds marked with an Asterisk (fund Amendments and Reauthorization Act (SAR) product is sold. This statement must remain a particular particular of the product is sold. This statement must remain a particular of the product is sold. This statement must remain a particular of the product is sold. This statement must remain a particular of the product is sold. The product is statement of the product is sold. T	n) are toxic chemic a) of 1986 and 40 cr of this Material NA 66	als subject to the reporting recEFR Part 372. You must notify Safety Data Sheet. Specific Gravity (H2O = Melting Point PH Evaporation Rate (Bulleting Ph PH PM	quirements of Si each person to 1) Liqui	ection 313 of whom this m	Title III of the Superixture or trade name
"All chemical compounds marked with an Asterisk (fund Amendments and Reauthorization Act (SAR) product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular than Air Solubility in Water **NIL** **All chemical compounds marked with an Asterisk (SAR) product is and an aparticular than Air Solubility in Water NIL**	n) are toxic chemic a) of 1986 and 40 cr of this Material NA 66	als subject to the reporting recEFR Part 372. You must notify Safety Data Sheet. Specific Gravity (H2O = Melting Point PH Evaporation Rate	quirements of So each person to 1) Liquityl Acetate = 1)	ection 313 of whom this m id ledicina	Title III of the Superixture or trade name
*All chemical compounds marked with an Asterisk(fund Amendments and Reauthorization Act (SAR/product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. The statement must remain a particular product is sold. The statement must remain a particular product is sold. The statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. This statement must remain a particular product is sold. T	n) are toxic chemic N) of 1986 and 40 0 It of this Material NA 66	als subject to the reporting recEFR Part 372. You must notify Safety Data Sheet. Specific Gravity (H2O = Melting Point PH Evaporation Rate (Bulleting Ph PH PM	quirements of So each person to 1) Liquityl Acetate = 1)	ection 313 of whom this m id ledicina	Title III of the Superixture or trade name
"All chemical compounds marked with an Asterisk (fund Amendments and Reauthorization Act (SAR) product is sold. This statement must remain a party. Section III - Physical/Chemical Characteristics Boiling Point Range Vapor Pressure PSIG @ 70°F Vapor Density (AIR = 1) Heavier than Air	n) are toxic chemic A) of 1986 and 40 or It of this Material NA 66 NA	als subject to the reporting recEFR Part 372. You must notify Safety Data Sheet. Specific Gravity (H2O = Melting Point PH Evaporation Rate (Bu Appearance and Odor Red Pas	quirements of So each person to 1) Liquityl Acetate = 1)	ection 313 of whom this m	Title III of the Superixture or trade name
*All chemical compounds marked with an Asterisk (fund Amendments and Reauthorization Act (SAR) product is sold. This statement must remain a party. Section III - Physical/Chemical Characteristics Boiling Point Range Vapor Pressure PSIG @ 70°F Vapor Density (AIR = 1) Heavier than Air Solubility in Water NIL Section IV - Fire and Explosion Hazard Data Flash Point (Method Used) 121°F TCC	NA 66 NA created dioxide	als subject to the reporting recEFR Part 372. You must notify Safety Data Sheet. Specific Gravity (H2O = Melting Point PH Evaporation Rate (Bu Appearance and Odor Red Pas	quirements of So each person to 1) Liquityl Acetate = 1)	ection 313 of whom this m id ledicina	Title III of the Superixture or trade name

occupit vivit	eactivity data	ě			RED GASKET
Stability	Unstable		Conditions to Avoid		
	Stable	- x	High Temperatures		
Incompatibility	(Materials to Avoid	<u> </u>			
Water ca	auses curing.	Inco	npatible with st	rong oxidizers.	
	composition or Byp	roducts		<u></u>	
ACÉTIC / Hazardous	Acid funes, Si May Occur	102, c			
Polymerization	ı		Conditions to Avoid		
	Will not Occur	х	None		
Section VI - H	ealth Hazard Data		•		·
Route(s) of En	try:	loha	ation? Yes .	Skin? Yes	Ingestion? Yes
Health Hazard No injur	s(Acute and Chroni 'y from silica	c) dust	should occur dur	ing reasonable use	. If use creates respirable
					roduct, as with any chemical
may enha	nce allergic	condit	ions in certain	people. No know c	hronic health effects, but
unnecess	ary exposure	to any	chemical should	be avoided. Cure	d sealant is non-hazardous.
			. 116		
arcinogenicity	r:	NTP?		IARC Monographs?	OSHA Regulated?
	Presently not or	any list	<u> </u>		·
		6 11			Waller Waller
				nts may cause diges	
consider:	able redness	lastin	g a week or more	<u>seriously with mod</u>	derate corneal injury and
ledical Conditi			g a neek or more		
	ivated by Exposure:	NO	YE KNOWN.		
nergency and	First Aid Procedure	s			
Flush eye	es and skin w	ith wa	er for 15 minute	es. Remove to fres	sh air.
ection VII - Pr	ecautions for Safe	Handlir	g and Use		
eps to be Tak	en in Case Material Use absorbent sy			aterial Put into container D	ispose as hazardous waste.
aste Disposal	Method		ste in accordance with E		
ecautions to b	e Taken in Handling	and Sto	ring	at temperatures below 120°	·F
her Precautio					nsecutively, use NIOSH approved respirato
ectionVIII - Co	introl Measures			<u> </u>	
	ection (Specify Type				
ntilation	Self contained brea	thing app	paratus if above TLV limit	l exceeding. Special	
guoti		Yes			None
	Mechanical (Gene			Other	Alona
otective Glove	<u> </u>	Non	-	Eye Protection	None
01046.					
	None required if s				eye protection
ner Protective		ent			eye protection

GEY 4.45



Material Safety Data Sheet

CHEVRON Supreme Motor Oil SAE 10W-30

CPS220019

1 of 7 Page

PRIESTLEY OIL & CHEMICAL 3746534 CO., INC. P O BOX 12570 PORTLAND, OR 97212

MATERIAL ORDERED FOR: BULK LUBE OIL PICK-UP WE FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: October 22, 1991 This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Changes have been made throughout this Material Safety Data Sheet. Read the entire document.

1. PRODUCT IDENTIFICATION

CHEVRON Supreme Motor Oil SAE 10W-30

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS220019 PRODUCT INFORMATION: (800)582-3835

Revision Number: 3 Revision Date: 09/27/91 MSDS Number: 004449 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary. However, if irritation persists, see a doctor.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is slightly irritating to the eyes and could cause prolonged (days) impairment of your vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, swelling, redness, and blurred vision.

SKIN IRRITATION:

This substance is a moderate skin irritant so contact with the skin could cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain or a feeling of heat, discoloration, swelling, and blistering.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

Revision Number: 3 Revision Date: 09/27/91 MSDS Number: 004449

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 401F (205C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Revision Number: 3 Revision Date: 09/27/91 MSDS Number: 004449

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Amber liquid.

BOILING POINT: NDA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.90 @15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 10 cst @ 100c (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

Revision Number: 3 Revision Date: 09/27/91 MSDS Number: 004449

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Supreme Motor Oil SAE 10W-30

CONTAINING

> 85.0 % DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547 5mg/3 mist ACGIH TLV 10mg/m3 mist ACGIH STEL

5mg/m3 mist OSHA TWA

AND

DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

CAS64742650

< 15.0 % ADDITIVES INCLUDING THE FOLLOWING

< 2.0 % ZINC ALKYL DITHIOPHOSPHATE

CAS68649423 A toxic chemical subject to the reporting requirements of

Section 313 of Title III of the Superfund Amendments and

Reauthorization Act of 1986 and 40 CFR Part 372.

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1. Immediate (Acute) Health Effects; YES

2. Delayed (Chronic) Health Effects; NO

Fire Hazard; NO

4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

Revision Number: 3 Revision Date: 09/27/91 MSDS Number: 004449

is found on lists: 14,15,17, ZINC ALKYL DITHIOPHOSPHATE is found on lists: 01,10,11.

REGULATORY LISTS SEARCHED:

01=SARA 313 03=NTP Carcinogen 02=MASS RTK 04=CA Prop. 65 06=IARC Group 1 05=MI 406 07=IARC Group 2A 09=SARA 302/304 08=IARC Group 2B 10=PA RTK ll=NJ RTK 12=CERCLA 302.4 13=MN RTK 14=ACGIH TLV 15=ACGIH STEL 16=ACGIH Calculated TLV 17=OSHA TWA 18=OSHA STEL 19=Chevron TLV 20=EPA Carcinogen 21=TSCA Sect 4(e) 22=TSCA Sect 5(a)(e)(f) 23=TSCA Sect 6 24=TSCA Sect 12(b) 25=TSCA Sect 8(a) 26=TSCA Sect 8(d) 28=Canadian WHMIS 29=OSHA CEILING

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably

Revision Number: 3 Revision Date: 09/27/91 MSDS Number: 004449

carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 3 Revision Date: 09/27/91 MSDS Number: 004449

- Health Hazard Data

Laturory or Recommended Occupational Exposure Limits: No Threshold Limit Value (TLV) or Permissible Zmit (PEL) exists for steel. Steel products in the natural state do not present an inhalation, ingestion or contact towaver, operations such as burning, welding, sawing, brazing, and grinding may result in the following effects if exceed permissable limits as listed in Section 2 of the individual constituents.

of Overexposure:

Dust or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal ne fever; or produce flu-like symptoms.

Bismuth Bismuth Boron Cobalt Chromium Copper Iron Lead Manganese Motybdenum	- Physical irritation - Physical irritation - Physical irritation - Physical irritation - Blood, heart, bone marrow, thyroid, lung and pancreatic damage - Skin, nasal tissue damage, cancer, possible mutations - Physical irritation - Lung damage - Metallic taste, weakness, constipation, nausea, nervous disorder, blood and urinary damage, reproductive and possible cancer hazard - Lung damage, lack of coordination - Affects liver, kidney, spleen, blood, causes diarrhea, bone deformation, and growth retardation	Nickel Phosphorous Sulfur Selenium Tellurium Titanium Vanadium Zinc * Coating oils	- Lung damage, skin sensitizer, some compounds may cause cancer. Listed NTPARC and IARC Monograph - Lower jaw bone damage - Affects lung - Nasal and lung irritation, stomach or bowel disturbance, garlic odor of breath - Garlic breath' and perspiration, metallic taste, dry mouth, nausea, reduced sweating, loss of appetite - Physical irritation - Lung damage - Affects blood cells - Steel coated with an oil may result in a mild skin irritation upon prolonged and repeated contact. Wear gloves and/wash skin following contact to prevent skin irritation.
--------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Usual Route(s) of Entry: Inhalation

Emergency and First Aid Procedures:

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

SECTION 6 – Reactivity Data

Stability: Considered Stable

Incompatibility: Not incompatible with materials

Hazardous Polymerization: Not Applicable

Hazardous Decomposition Products: Not Applicable

Conditions to Avoid: May liberate metal fumes, metal oxides, or other oxides if exposed to elevated temperatures.

SECTION 7 - Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Not Applicable Waste Disposal Method: This material may be reclaimed for reuse.

SECTION 8 – Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or code of Federal Regulations, Title 29, Part 1910.252. Welding, Cutting and Brazing, 1910.134, Respiratory Protection, and 1910-Subpart Z, Toxic and Hazardous Substances.

SECTION 9 - Special Precautions

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: Not Applicable

SECTION 10 - Superfund Amendments and Reauthorization Act of 1986 (S.A.R.A.)

SARA Title III Section 313 and 40 CFR Part 372: The chemicals identified by (*) in Section 2 denote a toxic chemical or chemicals subject to reporting requirements of section 313 of Title III, and 40 CFR Part 372.

SECTION 11 – California Proposition 65

One or more of the alloys listed on this sheet contains a material known to the state of California to cause cancer or reproductive Toxicity. These are:

> <u>Material</u> **Listed Effect** Nickel Cancer

Lead Reproductive Toxicity

Date Prepared:



Material Safety Data Sheet

STEEL



SECTION 1 – Product Identification

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place

Chicago, Illinois 60608

Chemical Name and Synonyms: STEEL

Chemical Family: Metals Formula: Not Applicable

SECTION 2 - Product Description and Hazardous Ingredients/Identity Information

See Chart Inside For Listing

SECTION 3 – Physical Data

Melting Point F (C): Greater Than 2800 (1540)

Vapor Pressure: Not Applicable

Vapor Density (Air = 1): Not Applicable

Solubility in Water: Negligible

Specific Gravity (H₂0 = 1): Greater Than 7 % Volatile by Volume (%): Not Applicable

Emergency Telephone: 312-762-2121

Evaporation Rate: Not Applicable

Appearance and Odor: Grayish to silvery odorless sheet, strip, plate, bar, structural shapes, pipe and tubing.

SECTION 4 – Fire and Explosion Hazard Data

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to surrounding area.

Flammable Limits: Not Applicable

Unusual Fire and Explosion Hazards: None

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products and fire fighting technique or agent(s) applicable to surrounding materials.

DISCLAIMER

RYERSON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND

FITNESS FOR A PARTICULAR PURPOSE. The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods, conditions; equipment used to store, handle or process the material; and hazards in connection with the use of the material are solely the responsibility of the user and remain at its sole

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, ection 1910. 1200 et seg. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ryerson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

Issued By: Joseph T. Ryerson & Son Inc.

Appendix33-000972

Steel groducts may be coated with petroleum oils to meet customer specifications. Information relative to specific coatings may be obtained from Ryerson.

·	CAS NUMBER:	7439-89-6	7439-96-5	7440-44-0	7429-90-5	7440-47-3	7440-50-8	7439-98-7	7448-02-0	ALLOYING 7723-14-0		4 .75	7440-42-8	7440-69-9	13494-80-9	7439-92-1	7440-62-2	7440-32-6	7440-66-	ETALLIC COA 6 7439-89-4	TINGS 6 7429-90-5
DUCT DESCRIPTION	AISI GRADE/TRADE NAME	Iron	*Manganese	Carbon	*Aluminum	*Chromium	*Copper i	Molybdenum	n - *Nickel	Phosphorous	Silicon	Sultur	Boron	Bismuth	Tellurium	*Lead	Vanadium	Titanium	*Zinc	iron	*Aluminum
resulfurized Carbon Steel resulfurized Carbon Steel: Vanadium Bearing	1005-1095 1005-1095	>95 >95	<1.0 <1.0	<1.0 <1.0	<0.5 <0.5	<0.5	40.5	40.5	4.5	d 5	** d15	105				1411.11	3.5	1.17		_	
resulfurized Carbon Steel: Lead Bearing	10L05-10L95	>95	<1.0	<1.0	<0.5	<0.5 <0.5	<0.5 -0.5	-0.5 -0.5	40.5	45	, 4 5	45			() () () () ()	-A E	⊲0.5	- E 28			-
resulfurized Carbon Steel: Titanium Bearing resulfurized Carbon Steel: Bismuth Bearing	1006 1016	>95 >95	<1.0 <1.0	<0.5 <1.0	<0.1	<0.2		d).2	12	45 47	- 615 - 613	- 45 43	Kara		4	\0. 5	44.	<0.7	jetu aju		
resulfurized Carbon Steel: Tellurium Bearing	1016	>95	<1.0	<1.0	<0.5 <0.5	<0.5 <0.5		<0.5 -	- 505	42 45	. 45	45		⊲0.5		1			n kjelan		
resulfurized Carbon Steel: Bismuth Bearing	1045	>95	<1.2	<0.5	<0.1	<0.4	ব্য.5 <0.2	<0.5 <0.1	-0.5 -0.2	- 45 - 43	45 43	, d5		<0.3	<0.5				1 - 1	-	
resulfurized Carbon Steel: Boron Treated resulfurized Carbon Steel: Boron Treated	10 B 38 10 B 42	>95 >95	<1.0 <1.0	<0.5 <0.5	<0.5	<0.4	<0.5	<0.5	40.2 40.5	- 41 - 42	. LIB 2.05	- d.1 1	ี (ม.)		,54.			Ľ.		
Ilfurized Carbon Steel	1106	>95	<1.0	<0.5	<0.5 <0.5	<0.4 <0.1	<0.5	<0.5	<0.5	- 42	' 0.5	41	41				W 1				
Ilfurized Carbon Steel	1110-1151	>95	<1.7	<0.6	< 0.5	<0.5	<0.2 <0.5	40.1 40.5	d).1 d).5	- 41 - 41	- 40.5 - 40.5	. d.2 . d.2									
Iffurized Carbon Steel: Bismuth Bearing Iffurized Carbon Steel: Tellurium Bearing	1110-1151 1110-1 1 51	>95 >95	<1.7 <1.7	<0.6 <0.6	<0.5 <0.5	<0.5	<0.5	<0.5	<0.5	41	<0.5	42		-0.5					ante de la companya d		
Ilfurized Carbon Steel: Vanadium Bearing	1110-1151	>95	<1.7	<0.6	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	40.5	d .5	4.1	40.5	- 6.2			- 40.2						
nosphorized and Resulfurized Carbon Steel: Lead Bearing	11L10-11L51	>95	<1.7	<0.6	< 0.5	<0.5	<0.5	<0.5 <0.5	<0.5 <0.5	41 41	<0.5 <0.5	-02 -02				<0.5	<0.5			**	
Ilfurized Carbon Steel: Lead Bearing Ilfurized Carbon Steel: Lead and Tellurium Bearing	11L10-11L51 11L10-11L51	>95 >95	<1.7 <1.7	<0.6 <0.6	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<0.5	⊲0.1	<0.5	≪0.2			10 - 12 - 12 - 13 - 13 - 13 - 13 - 13 - 13	<0.5		- 1		1	
nosphorized and Resulfurized Carbon Steel: Bismuth Bearing	1211-1215	>95	<1.2	<0.2	< 0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	⊲0.1 ⊲0.2	<0.5 <0.5	<0.2 <0.4			<0.2	⊲0.5		· · · .			
nosphorized and Resulturized Carbon Steel: Tellurium Bearing		>95	<1.2	<0.2	< 0.5	<0.5	<0.5	<0.5	<0.5	40.2	d).5	40.4		-0.5	d .2						
nosphorized and Resulfurized Carbon Steel nosphorized and Resulfurized Carbon Steel: Lead Bearing	1211-1215 12L11-12L15	>95 >95	<1.2 <1.2	<0.2 <0.2	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<0.5	<0.2	<0.5	4.4				:		- 1			
resulfurized Carbon Steel	1513-1566	>95	<2.0	<1.0	<0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.7 <0.1	<0.5 <0.5	d).4 d).1				<0.5					
resulfurized Carbon Steel: Vanadium Bearing	1513-1566	>95	<2.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	d .1	<0.5	d 0.1		file.	-		<0.5	- 1	ı		
resulfurized Carbon Steel: Vanadium, Titanium and Boron dard Alloy Steel: Manganese	15813-15836 1330-1345	>95 >95	<2.0 <2.0	<0.5 <0.5	<0.2 <0.5	<0.3 <0.2	<0.6	-	<0.3	d 11	<0.5	- 40.1	<0.1		-		<0.1	<0.1			
dard Alloy Steel: Molybdenum Bearing	4023-4047	>95	<1.0	<0.5	<0.5	<0.2	<0.5 <0.5	<0.2 <0.3	<0.3	40.1 40.1	<0.5 ⊲0.3	<0.1 <0.1	10,1950		·			- 1	ı		
dard Alloy Steel: Molybdenum and Chromium	4118-4161	>95	<1.0	<0.7	< 0.5	<1.1	<0.5	<0.5		40.1	<0.3	<0.1						- 1	ı		
idard Alloy Steel: Tellurium Bearing idard Alloy Steel: Boron Treated	4118-4161 41B18-41B61	>95 >95	<1.0 <1.0	<0.7 <0.7	<0.5 <0.5	<1.1	<0.5	<0.5		<0.1	<0.3	<0.1			<0.2			- 1			
dard Alloy Steel: Vanadium, Titanium and Boron	41818-41861	>95	<1.0	<0.7	<0.5	<1.1 <1.1	<0.5 <0.5	<0.5 <0.5		<0.1 <0.1	<0.3 <0.3	<0.1 <0.1	<0.1 <0.1				<0.5	<0.5	ı		
dard Alloy Steel: Molybdenum, Chromium and Lead	41L18-41L61	>95	<1.0	<0.7	< 0.5	<1.1	< 0.5	<0.5		40.1	<0.3	<0.1				<0.5	10.0	10.0	ı		
dard Alloy Steel: Molybdenum, Chromium and Nickel dard Alloy Steel: Molybdenum and Nickel	4320-4340 4617-4626	>95 >95	<1.0 <0.7	<0.5 <0.3	<0.5 <0.5	<1.0	<0.5	<0.3	<2.0	⊲0.1	<0.3	<0.1		-				-	1		
dard Alloy Steel: Boron Treated	50840-50860	>95	<1.0	<0.7	<0.5	<1.0	<0.5 <0.5	<0.3	<2.0	⊲0.1 ⊲0.1	<0.3 <0.3	<0.1 <0.1	<0.1					-	ı		
dard Alloy Steel: Chromium Bearing	5115-5160	>95	<1.0	<0.6	<0.5	<1.1				₹0.1	<0.3	<0.1						1	ı		
dard Alloy Steel: Boron Treated dard Alloy Steel: Chromium	51B60 50100	>95 >95	<1.0 <0.5	<0.7 <1.2	<0.5 <0.5	<1.0 <0.7	<0.5			<0.1	<0.3	<0.1	<0.1					- 1	ı		
dard Alloy Steel: Chromium	51100	>95	<0.5	<1.2	<0.5	<0.7	<0.5 <0.5	<0.2 <0.2	<0.3 <0.3	⊲0.1 ⊲0.1	<0.5 <0.5	<0.1 <0.1						- 1	ı		
dard Alfoy Steel: Chromium	52100	>95	<0.5	<1.2	<0.5	< 0.7	<0.5	<0.2	<0.3	<0.1	< 0.5	<0.1						- 1	ı		
dard Alfoy Steel: Chromium & Vanadium dard Alfoy Steel: Molybdenum, Chromium and Nickel	6118-6150 8615-8822	>95 >95	<1.0 <1.0	< 0.6	<0.5 <0.5	<1.2	<0.5	<0.2	<0.3	<0.1	< 0.5	<0.1					<0.3	1	ı		
dard Alloy Steel: Molybdenum, Chromium Nickel and Lead	86L15-86L55	>95	<1.0	<0.6 <0.6	<0.5 <0.5	<0.6 <0.6	<0.5 <0.5	<0.5 <0.5	<0.7 <0.7	⊲0.1 ⊲0.1	<0.3 <0.3	<0.1 <0.1				<0.5			ı		
dard Alloy Steel: Nickel, Chrome & Molybdenum	9310	>92	<0.7	< 0.2	< 0.5	<1.5	<0.5	<0.2	<3.6	<0.1	< 0.5	<0.1				70.0			ı		
dard Alloy Steel: Boron Treated nd ALUMA-TI	94B15-94B30 ALUMA-TI	>93 > 9 5	<1.1 <0.7	<0.4	< 0.5	<0.6	0.5	<0.2	<0.7	<0.1	< 0.5	<0.1							ı		••
MINIZED STEEL	ALUMINIZED STEEL		<1.2	<0.3 <0.3	<0.1 <0.5	<0.2 <0.5		<0.2 <0.5	0.2	<0.2 <0.5	<0.3 <0.5	<0.2 <0.5						<0.7	ı		>98 >98
nd CAL DI-FORM	CAL DI-FORM	>95	<1.0	<0.2	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.3	<0.4					<0.2	<0.1	ı		230
id CAL HI-FORM	CAL HI-FORM	>97	<1.0	<0.2	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	< 0.3	<0.4					< 0.2	<0.1	ı		
nd CORTEN A nd CORTEN B	CORTEN A CORTEN B	>95 >95	<0.7 <1.5	<0.2 <0.2	<0.1 <0.1	<2.0 <1.0	<1.0 <0.5	<0.5 <0.1	<0.7 <0.5	<0.2 <0.2	<1.0 <1.0	<0.1 <0.1					<0.2 <0.3		ı		
nd CORTEN C	CORTEN C	>95	<1.5	<0.2	<0.1	<1.0	<0.5	<0.1	<0.5	<0.2	<1.0	<0.1					<1.0		ı		
d CORTEN W	CORTEN W	>95	<1.0	<0.4	<0.1	<1.0	< 0.5	<0.1	<0.4	<0.2	< 0.5	<0.2				•	<0.2		ı		
nd DECOR nd EZ CUT	DECOR EZ CUT	>95 >95	<2.0 <2.0	<1.0 <0.3	<0.5 <0.2	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.1	<0.5 <0.5	<0.5 <0.4				-05			>98		
nd 4-WAY	4-WAY	>95	<1.0	<0.5	< 0.5	<0.1	<0.2	<0.1	<0.2	<0.2	< 0.5	<0.4				(0.5			ı		
nd HI-FORM	HI-FORM	>95	<2.0	<0.2	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	< 0.3	<0.1					<0.2	<0.1	ı		
nd INAMEL nd INCUT	INAMEL INCUT	>95 >95	<0.7 <2.0	<0.5 <0.2	<0.1 <0.2	<0.2 <0.5	<0.2 <0.5	<0.3 <0.5	<0.2 <0.5	<0.1 <0.5	<0.5 <0.5	<0.1 <0.5		<0.5					ŧ		
id INX	INX	>95	<2.0	<0.4	<0.1	<0.5	<0.3	< 0.5	<0.5	<0.5	<0.5	<0.5		C.03			<0.2	<0.1	1		
IN BISMUTH	INX BISMUTH	>95	<2.0	<0.4	<0.1	< 0.5	<0.3	<0.5	<0.5	<0.1	< 0.4	<0.1		<0.2			<0.2	<0.1	ı		
nd INX LEDLOY nd LEDLOY	INX LEDLOY LEDLOY	>95 >95	<2.0 <2.0	< 0.4	<0.1	<0.5	<0.3	<0.5	<0.5	<0.1	<0.4	<0.1				<0.4	<0.2	<0.1	i		
d LEDLOY A	LEDLOY A	>55 >95	<1.2	<0.7 <0.2	<0.2 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.1 <0.2	<0.5 <0.5	<0.4 <0.4				<0.5 <0.5			i		
d LEDLOY AN	LEDLOY AN	>95	<1.2	< 0.2	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.2	<0.5	<0.4				< 0.5			i		
nd LEDLOY AX nd MartiNsite	LEDLOY AX MartiNsite	>95 > 9 5	<1.7 <0.7	<0.5	< 0.5	< 0.5	<0.5	<0.5	<0.2	<0.1	<0.5	<0.4			<0.2	<0.5		ا بم	i		
ET-TITE	Martinsite PAINT-TITE	>95 >95	<0.7	<0.5 <0.5	<0.1 <0.5	<0.1 <0.5	<0.2 <0.3	<0.1 <0.5	<0.2 <0.5	<0.1 <0.5	<0.5 <0.5	<0.1 <0.5	<0.1					<0.1	>89	>10	
nd TI-CO Galvanized	TI-CO	>95	<2.0	<1.0	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5							>98	7.0	
d TI-NAMEL d TRI-STEEL	TI-NAMEL	>95	<1.0	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1						<0.5	i		
resulfurized Carbon Steel	TRI-STEEL ASTM A36	>95 >95	<1.5 <1.2	<0.5 <0.3	<0.1 <0.5	<0.1 <0.5	<0.4 <0.5	<0.5 <0.1	<0.2 <0.5	<0.2 <0.2	<0.4 <0.5	<0.1 <0.1					<0.2		i		
dard Alloy Steel: Chromium Molybdenum	ASTM A182	>87	<1.0	<0.2	< 0.5	<10.1	<0.5	<1.2	<0.5	<0.1	<1,1	<0.1							i		
dard Alloy Steel: Chromium Molybdenum resuffurized Carbon Steel	ASTM A182 GR F11	>93	<1.0	< 0.2	< 0.5	<1.6	<0.5	<0.7	<0.5	<0.1	<1.1	<0.1							i		
resulfurized Carbon Steel resulfurized Carbon Steel	ASTMI A283 ASTM A285	>95 > 9 5	<1.2 <1.0	<0.3 <0.3	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.1 <0.1	<0.5 <0.5	<0.2 <0.2	<0.5 <0.5	<0.1 <0.1							I		
dard Alloy Steel: Chromium Molybdenum	ASTM A387 GR 11	>94	<1.0	<0.2	< 0.5	<0.5 <1.6	<0.5	<0.7	<0.5	<0.2 <0.1	<0.5 <1.0	<0.1 <0.1							i		
dard Alloy Steel: Chromium Molybdenum	ASTM A387 GR 22	>93	<1.0	<0.2	< 0.5	<3.0	<0.5	<1.5	<0.5	<0.1	<1.0	<0.1							i		
resulfurized Carbon Steel dard Alloy Steel: Nickel Chromium, Boron	ASTM A455 ASTM A514	>95 >94	<1.5 <1.6	<0.4 <0.3	<0.5	<0.5 <1.7	<0.5	<0.1 <0.7	<0.5	<0.1	<0.5	<0.1	0.1				0.1	0.2	l .		
resulfurized Carbon Steel	ASTM AS14 ASTM A515	>94 >95	<1.6	<0.3 <0.4	<0.5 <0.5	<1.3 <0.5	<0.7 <0.5	<0.7 <0.1	<2.0 <0.5	<0.1 <0.1	<1.0 <0.5	<0.1 <0.1	0.1				V. 1	U.Z	i .		
dard Alloy Steel: Nickel Chromium, Boron	ASTM A517	>94	<1.6	<0.3	<0.5	<1.7	<0.7	<0.7	<2.0	<0.1	<1.0	<0.1	0.1				0.1	0.2	i		
																			i		
*Aluminum Bismuth Boron	n Carbon *Ch	hromium	*Capper		Iron	*Lead	anna	anese	denum	n *Nick	el	Phosphorus	s Sili	icon	Sulfur	T	ellurium	Titanium	1 V	anadium	*Zinc
Contaminant and As Not As	Not M	Metals	As Copper	As	s Total	As	As		oluble	As Meta		As	10,5 n	esp. 10	As Sulfur		As Te	10,5 resp.	10 As 1	Vanadium	As Zinc Oxi
	n Listed 1	1 0.5 romium II	Dust 1 1	Pari		norganic Pb Dust and	Manga Dus	nese	Mo Compounds	1 1		Phosphorus (yellow) 0.1 0.1		-	Dioxide 5, 13c 5, 13d		mpounds 0.1 0.1	•	Pent	toxide Dust Fresp. PEL	Dust 10,5 resp.
Exposure Limits Welding Listed Boron		VIIIIVIII II										(yellow)			v, 1.0€ 0, 13€	•	V-1 V-1				As Zinc Oxi
Exposure Limits Welding Listed Boron (mg/m³) Fume Oxide 15 10) and	d III cpds	As Copper		ks Fe	Fume	5c		5 5	Ni		0.1 0.1							0.05	resp. TLV	AS ZINC UX
Exposure Limits Welding Listed Boron (mg/m³) Fume Oxide 15 10 PEL TLV 5 5 Values are time-	o and	0.5 0.5	Fume			0.05 0.15	As	1	As Insoluble	Compou	ınds	0.1 0.1							As۱	Vanadium	Fume
Exposure Limits Welding Listed Boron Oxide (mg/m³) Furne 15 10 15 10 Values are time-weighted averages,) and 0. Chro and 0	0.5 0.5 omic Acid Chromates					As Manga Fun	inese	As Insoluble Mo	Compou 0.1 0	ınds	0.1 0.1							As \ Pe	Vanadium entoxide Furne	Fume 5, 10c 5, 1
Exposure Limits Welding Listed Boron (mg/m³) Fume Oxide 15 10 PEL TLV 5 5 Values are time-	0 and C Chrc and C 0.1	0.5 0.5 omic Acid	Fume				As Ma <u>ng</u> a	inese	As Insoluble	Compou 0.1 0	ınds	0.1 0.1							As \ Pe	Vanadium entoxide	Fume

Hezard Data

or Recommended Occupational Exposure Limits: No Threshold Limit Value (TLV) or Permissible (1) exists for stainless steel. Steel products in the natural state do not present an inhalation, ingestion or Nowever, operations such as burning, welding, sawing, brazing, and grinding may result in the following course exceed permissable limits as listed in Section 2 of the individual constituents.

was or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal or produce flu-like symptoms.

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
2 7 A L	
Aluminum	
D:	
Bismuth	
2.0	
Boron	
0 5 4	
Cobait	
Property (
The state of the s	
~ L	
Chromium	
7.53	

- Physical irritation
- Physical irritation
- Physical irritation

lung and pancreatic damage

nausea, nervous disorder.

and possible cancer hazard

- Lung damage, lack of coordination

possible mutations

- Physical irritation

Lung damage

- Blood, heart, bone marrow, thyroid,

Skin, nasal tissue damage, cancer,

Metallic taste, weakness, constipation,

blood and urinary damage, reproductive

Molybdenum – A

c

Q

Nickel – L

Phosphorous

Sulfur

Selenium

Titanium

Tungsten

 Affects liver, kidney, spleen, blood, causes diarrhea, bone deformation, and growth retardation

Lung damage, skin sensitizer, some compounds may cause cancer.
 Listed NTPARC and IARC Monograph
 Lower law bone damage

Affects lung
 Nasal and lung irritation, stomach or bowel disturbance, garlic odor of breath
 Physical irritation

Over exposure to tungsten dust can result in hard metal disease whose symptoms are cough, wheezing, and shortness of breath.

Vanadium - Lung damage

Usual Route(s) of Entry: Inhalation

Emergency and First Aid Procedures: In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

SECTION 6 - Reactivity Data

Stability: Considered Stable

Incompatibility: Not incompatible with materials
Hazardous Polymerization: Not Applicable
Hazardous Decomposition Products: Not Applicable

Conditions to Avoid: May liberate metal fumes, metal oxides, or other oxides if exposed to elevated temperatures. Acid pickling of product may result in the formation of hexavalent chromium which is a hazardous waste and suspect carcinogen.

SECTION 7 – Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Not Applicable Waste Disposal Method: This material may be reclaimed for reuse.

SECTION 8 – Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or code of Federal Regulations, Title 29, Part 1910.252, Welding, Cutting and Brazing, 1910.134, Respiratory Protection, and 1910-Subpart Z, Toxic and Hazardous Substances.

SECTION 9 - Special Precautions

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: Plasma arc cutting or welding can generate ozone. Overexposure can result in mucuous membrane irritation, as well as pulmonary changes including irritation, congestion and edema.

Section 10 - Superfund Amendments and Reauthorization Act of 1986 (S.A.R.A.)

SARA Title III Section 313 and 40 CFR Part 372: The chemicals identified by (*) in Section 2 denote a toxic chemical or chemicals subject to reporting requirements of section 313 of Title III, and 40 CFR Part 372.

Section 11 – California Proposition 65

One or more of the alloys listed on this sheet contains a material known to the state of California to cause cancer or reproductive Toxicity. These are:

MaterialListed EffectNickelCancerLeadReproductive Toxicity

Date Prepared: November 18, 1991



Material Safety Data Sheet STAINLESS



SECTION 1 - Product Identification

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place

Chicago, Illinois 60608
Chemical Name and Synonyms: STAINLESS STEELS

Chemical Family: Metals Formula: Not Applicable

Emergency Telephone: 312-762-2121

SECTION 2 - Product Description and Hazardous Ingredients/Identity Information

See Chart Inside For Listing

SECTION 3 - Physical Data

Melting Point F (C): Greater Than 2550 (1400)
Vapor Pressure: Not Applicable

Vapor Pressure: Not Applicable
Vapor Density (Air = 1): Not Applicable

Specific Gravity (H₂0 = 1): Greater Than 7 % Volatile by Volume (%): Not Applicable Evaporation Rate: Not Applicable

Solubility in Water: Negligible

Appearance and Odor: Grayish to silvery odorless sheet, strip, plate, bar, structural shapes, pipe and tubing.

SECTION 4 - Fire and Explosion Hazard Data

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to

Flammable Limits: Not Applicable
Unusual Fire and Explosion Hazards: None

surrounding area.

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products and fire fighting technique or agent(s) applicable to surrounding materials.

DISCLAIMER

RYERSON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods; conditions; equipment used to store, handle or process the material; and hazards in connection with the use of the material are solely the responsibility of the user and remain at its sole discretion.

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910. 1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ryerson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

Nover

		CAS NI	JMBER:	METAL 7439-89-6	7 439-96- 5	7440-44-0		7704-34-9	7740-21-3	ALOYNE BENE		B 6 2 744	5-7 7440-83-1	7440-50-8	7440-62-2	7439-98-7	7727-37-9	7440-32-6	7440-33-7
GRADE				Iron	*Manganese	Carbon	Phosphorous	Sulfur	Silicon	*Chrombust	•••	entum Columb	lum Tentalum	* Copper	Vanadium	Molybdenum	Nitrogen	Titanium	Tungsten
203EZ 303 304				>65 >67	<6.5 >2.0	⊲0.1 ⊲0.2	<0.1 <0.2	<0.4 <0.1	<1.0 <1.0	<18.0 <19.0		THE REPORT					<0.1		
304L 309S 310S				>66 >64 >57	<2.0 <2.0 <2.0	<0.1 <0.1 <0.1	40.1 40.1 40.1	≪0.1 ≪0.1 ≪0.1	<1.0 <1.0 <1.0	20.0 20.0 24.0	<10.5 <12.8 <18.9	43					<0.1		
316 316L 317L 321 330				>48 >61 >61 >57 >65 >42	<2.0 <2.0 <2.0 <2.0 <2.0 <2.0	<0.1 <0.1 <0.1 <0.1 <0.1 <0.2	<0.1 <0.1 <0.1 <0.1 <0.1 <0.1	<0.1 <0.1 <0.1 <0.1 <0.1 <0.1	<1.0 <1.0 <1.0 <1.0 <1.0 <1.5	<26.0 <18.0 <18.0 <20.0 <19.0 <17.0	<16.9 42.9 <14.0 <14.0 <15.0 <12.0 47.0					<3.0 <4.0 <4.0	<0.1		
347 4105 416 422 440C 409 430				>41 >74 >81 >79 >77 >84 >79	<2.0 <1.0 <1.5 <1.0 <1.0 <1.0 <1.0	 €0.1 €0.1 €0.1 €0.3 <1.2 <0.1 <0.2 	<0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1	<0.1 <0.1 <1.0 <0.1 <0.1 <0.1	<1.0 <1.0 <1.0 <1.0 <1.0 <1.0	<19.0 <13.5 <14.0 <14.0 <18.0 <11.8 <18.0	< 1.0				<0.5	<0.6 <1.3 <0.8		<0.8	<1.3
TRADE NAMES Nitronic 30 Nitronic 50 Nitronic 60 PH 15-5				>68 >54 >59 >70	<10.0 < 6.0 < 9.0 < 1.0	<0.2 <0.1 <0.1 <0.1	<0.1 <0.1 <0.1 <0.1	<0.1 <0.1 <0.1 <0.1 <0.1	<1.0 <1.0 <4.5 <1.0	<18.0 <23.5 <18.0 <15.5	< 3.5 <13.5 < 9.0 < 5.5	√ 0	· · · · ·	<1.5 <4.5	<0.3	<0.5	<0.4 <0.5 <0.2		
PH 17-4 PH 13-8-Mo ALLOY 30 2205				>74 >75 >30	< 1.0 < 0.1 < 2.0 < 2.0	<0.1 <0.1 <0.1 <0.1	<0.1 <0.1 <0.1 <0.1	<0.1 <0.1 <0.1 <0.1	<1.0 <0.1 <1.0 <1.0	<17.0 <13.3 <21.5 <23.5	< 5.0 < 8.5 <38.5 < 7.0	<0 . <1		∠4,5		<2.5 <3.5 <4.0	<0.1 <0.1 <0.2		<1.4
	*Aluminum	Carbon	*Chromium	Columbium	*Coppe	r	Iron	*Manganese	Molybdenum	*Nickel	Phosphorus	Selenium	Silicon	Sulfur	Tantalum	Titanium	Tun	gsten	Vanadium
Contaminant and Exposure Limits (mg/m³) PEL TLV Values are time-weighted averages, except "c" indicates a ceiling	As Welding Fume 5 5	Not Listed	As Metal 1 0.5 Chromium II and III cpds 0.5 0.5 Chromic Acid and Chromates 0.1c 0.05 as Cr0 ₃ as Cr	Not Listed	As Coppy Dust 1 1 As Coppy Fume 0.1 0.2	er P		s Manganese Dust 5c 5c As Manganese Fume 1.3c 1.3c	As Soluble Mo Compounds 5 5 As Insoluble Mo Compounds 10 10	As Metal Ni 1 1 As Soluble Ni Compounds 0.1 0.1	As Phosphorus (yellow) 0.1 0.1	As Metal Se 0.2 0.2	10,5 resp. 10	As Sulfur Dioxide 5, 13c 5, 13c	Metal, Oxide 5 5	e 10,5 resp. 1	10 Metal, W Com 1,3c Insolu Comp	Soluble appounds 1,3c uble W	As Vanadium Pentoxide Dust 0.05 resp. PEL 0.05 resp. TLV As Vanadium Pentoxide Fume 0.05 0.05

PEL TLV
Values are timeweighted averages,
except "c"
indicates a ceiling
or short-term
exposure limit

Health Hazard Data

utory or Recommended Occupational Exposure Limits: No Threshold Limit Value (TLV) or Permissible Limit (PEL) exists for nickel alloys. See chart inside for listing of the individual constituents. Civerexposure:

Dust or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal fever; or produce flu-like symptoms.

	О		

į.	Aluminum
	Bismuth
	A

Cobalt

- Physical irritation - Physical irritation

- Physical irritation

- Blood, heart, bone marrow, thyroid. lung and pancreatic damage Skin, nasal tissue damage, cancer,

possible mutations Copper - Physical irritation

 Lung damage - Metallic taste, weakness, constipation, nausea, nervous disorder, blood and urinary damage, reproductive

and possible cancer hazard - Lung damage, lack of coordination

Manganese

Molybdenum

Nickel

Titanium

Tungsten

*Coating oils

- Affects liver, kidney, spleen, blood, causes diarrhea, bone deformation, and growth retardation

- Lung damage, skin sensitizer, some compounds may cause cancer. Listed NTPARC and IARC Monograph - Physical irritation

 Steel coated with an oil may result in a mild skin irritation upon prolonged and repeated contact. Wear gloves and/or wash skin following contact to prevent - Over exposure to tungsten dust can result in hard

metal disease whose symptoms are cough, wheezing,

and shortness of breath.

Usual Route(s) of Entry: Inhalation **Emergency and First Aid Procedures:**

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

SECTION 6 - Reactivity Data

Stability: Considered Stable

Incompatibility: Not incompatible with materials Hazardous Polymerization: Not Applicable

Hazardous Decomposition Products: Not Applicable

Conditions to Avoid: May liberate metal fumes, metal oxides, or other oxides if exposed to elevated temperatures.

SECTION 7 – Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Not Applicable Waste Disposal Method: This material may be reclaimed for reuse.

SECTION 8 – Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or code of Federal Regulations, Title 29, Part 1910.252, Welding, Cutting and Brazing, 1910.134, Respiratory Protection, and 1910-Subpart Z, Toxic and Hazardous Substances.

SECTION 9 - Special Precautions

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: Not Applicable

Issued By: Joseph T. Ryerson & Son Inc.

SECTION 10 - Superfund Amendments and Reauthorization Act of 1986 (S.A.R.A.)

SARA Title III Section 313 and 40 CFR Part 372: The chemicals identified by (*) in Section 2 denote a toxic chemical or chemicals subject to reporting requirements of section 313 of Title III, and 40 CFR Part 372.

SECTION 11 - California Proposition 65

One or more of the alloys listed on this sheet contains a material known to the state of California to cause cancer or reproductive Toxicity. These are:

> <u>Material</u> Nickel

Listed Effect Cancer

Lead

Reproductive Toxicity

Date Prepared:



Material Safety Data Sheet

Emergency Telephone: 312-762-2121

NICKEL



SECTION 1 - Product Identification

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place Chicago, Illinois 60608

Chemical Name and Synonyms: NICKEL ALLOYS

Chemical Family: Metals Formula: Not Applicable

SECTION 2 - Product Description and Hazardous Ingredients/Identity Information

See Chart Inside For Listing

SECTION 3 - Physical Data

Melting Point F (C): Greater Than 2300 (1260)

Vapor Pressure: Not Applicable Vapor Density (Air = 1): Not Applicable

Solubility in Water: Negligible

Appearance and Odor: Grayish to silvery odorless sheet, strip, plate, bar, structural shapes, pipe and tubing.

SECTION 4 - Fire and Explosion Hazard Data

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to surrounding area.

Flammable Limits: Not Applicable

Unusual Fire and Explosion Hazards: None

Specific Gravity ($H_20 = 1$): Greater Than 7

% Volatile by Volume (%): Not Applicable

Evaporation Rate: Not Applicable

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products and fire fighting technique or agent(s) applicable to surrounding materials.

DISCLAIMER

RYERSON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the use thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods; conditions; equipment used to store, handle or process the material; and hazards in connection with the use of the material are solely the responsibility of the user and remain at its sole

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910. 1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Ryerson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

Appendix33-000976

^{*} Steel products may be coated with petroleum oils to meet customer specifications. Information relative to specific coatings may be obtained from Ryerson.

	CAS NUMBER:	7440-02-0	7440-48-4	7440-47-3	7439-98-7	HAZARDOI 7440-33-7	US CONSTITUENTS 7439-89-8	B - NOMBIAL PERCENT 744-21-3	743 9-86- 5	7440-44-0	7249-90-5	7440-32-6	7440-50-8	7727-37-9	7440-42-8	
Grade		*Nickel	*Cobalt	*Chromium	Molybdenum	Tungsten:	Iron	Silicon	*Manganese	Carbon	*Aluminum	Titanium	* Copper	Nitrogen	Boron	Others
200		99.2				(0.40	0.15	0.35	0.10		0.10	0.25			
201		99.0					0.40	0.15	0.35	0.02		0.10	0.25			
400		66.5	1.0				1.5	0.50	1.25	0.15	0.50	÷ -	31.0			
404		54.5					0.50	0.10	0.10	0.15	0.50		45,0			
R405		66.5	1.0				2.5	0.50		0.25	0.50		31.0			
K500		63.0	1.0				2.0	0.50	1.5	0.20	2.70	0.60	29.0			
600		72.0	1.0	15.5			8.0	0.50	1.0	0.08	0.35	0.30	0.50			
800		32.5	2.0	21.0			44.0	1.00	1.5	0.10	0.38	0.38	0.75	***		
800H/800HT		32.5	2.0	21.0			44.0	1.00	1.5	0.08	0.38	0.38	0.75			
825		42.0	2.0	21.5	3.0			0.50	1.0	0.50	0.20	1.0	2.20			
C276		57.0	2.5	15.5	16.0	4.0	5.5	0.08	1.0	0.01						V-0.35
625		62.0	1.0	21.5	9.0		5.0	0.50	0.50	0.10	0.40	0.40				Cb + Ta-3.7
718		52.5	1.0	18.0	3.0		19.0	0.35	0.35	0.05	0.50	0.90	0.10		0.004	Cb + Ta-5.0
X-750		70.0	1.0	15.5			7.0	0.35	0.35	0.08	0.80	2.5	0.50			Cb + Ta-1.0

	*Aluminum	Boron	Carbon	*Cobalt	*Chromium	Columbium	*Copper	Iron	*Manganese	Molybdenum	*Nickel	Nitrogen	Silicon	Tantalum	Titanium	Tungsten	Vanadium
Contaminant and Exposure Limits (mg/m³) PEL TLV Values are time-weighted averages, except "c" indicates a ceiling	As Welding Fume 5 5	As Boron Oxide 10,5 resp. 10	Not Listed	As Dust and Furne 0.1 0.1	As Metal 1 0.5 Chromium II and III cpds 0.5 0.5 Chromic Acid and Chromates 0.1c 0.05 as Cr0, as Cr	Not Listed	As Copper Dust 1 1 As Copper Fume 0.1 0.2	As Total Particulate 10 - As Fe - 5	As Manganese Dust 5c 5c As Manganese Fume 1,3c 1,3c	As Soluble Mo Compounds 5 5 As Insoluble Mo Compounds 10 10	As Metal Ni 1 1 As Soluble Ni Compounds 0.1 0.1	Not Listed	10,5 resp. 10	Metal, Oxide 5 5	10,5 resp. 10	Metal, Soluble W Compounds 1,3c 1,3c Insoluble W Compounds 5, 10c 5, 10c	As Vanadium Pentoxide Dust 0.05 resp. 0.05 resp. As Vanadium Pentoxide Fume 0.05 0.05

SECTION 5 – Health Hazard Data

Applicable Statutory or Recommanded Occupational Exposure Limits: No Threshold Limit Value (TLV) or Permissible Exposure Limit (PEL) exists for aluminum alloys. See chart inside for listing of the individual constituents. **Effects of Overexposure:**

Acute - Dust or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal fume fever; or produce flu-like symptoms.

Chronic

Aluminum Bismuth

- Physical irritation - Physical irritation - Physical irritation

Boron Cobalt

- Blood, heart, bone marrow, thyroid, lung and pancreatic damage

Chromium

 Skin, nasal tissue damage, cancer, possible mutations

Copper

- Physical irritation

Lead

- Lung damage

- Metallic taste, weakness, constipation,

nausea, nervous disorder,

blood and urinary damage, reproductive and possible cancer hazard

Manganese

- Lung damage, lack of coordination

Titanium Vanadium

- Physical irritation - Lung damage - Affects blood cells

Emergency and First Aid Procedures:

In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

SECTION 6 – Reactivity Data

Stable under normal conditions of use, storage and transportation.

For finely divided aluminum (e.g., small chips, fines):

With water: Generates hydrogen and heat slowly. Water/aluminum mixtures may be hazardous when confined.

With heat: Oxidizes at a temperature-dependent rate.

With strong oxidizers: Violent reaction with much heat generation.

With acids & alkalies: Reacts to generate hydrogen.

With halogenated compounds: Halogenated hydrocarbons can react violently with finely divided aluminum.

SECTION 7 – Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Not Applicable

Waste Disposal Method: This material may be reclaimed for reuse.

SECTION 8 – Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or code of Federal Regulations, Title 29, Part 1910.252, Welding, Cutting and Brazing, 1910.134, Respiratory Protection, and 1910-Subpart Z, Toxic and Hazardous Substances.

SECTION 9 – Special Precautions

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: Plasma arc cutting or welding can generate ozone. Overexposure can result in mucous, membrane irritation as well as pulmonary changes including irritation, congestion and edema.

Section 10 - Superfund Amendments and Reauthorization Act of 1986 (S.A.R.A.)

SARA Title III Section 313 and 40 CFR Part 372: The chemicals identified by (*) in Section 2 denote a toxic chemical or chemicals subject to reporting requirements of section 313 of Title III, and 40 CFR Part 372.

Section 11 - California Proposition 65

One or more of the alloys listed on this sheet contains a material known to the state of California to cause cancer or reproductive Toxicity. These are:

Listed Effect

Nickel

Cancer

Lead

Reproductive Toxicity

Date Prepared: November 18, 1991



Material Safety Data Sheet

ALUMINUM

Emergency Telephone: 312-762-2121



SECTION 1 - Product Identification

Distributor: Joseph T. Ryerson & Son, Inc.

Address: 2621 W. 15th Place

Chicago, Illinois 60608

Chemical Name and Synonyms: ALUMINUM ALLOY

Chemical Family: Metals Formula: Not Applicable

SECTION 2 - Product Description and Hazardous Ingredients/Identity Information

See Chart Inside For Listing

SECTION 3 – Physical Data

Melting Point F (C): Wide Range - 900-1200 (482-649)

Vapor Pressure: Not Applicable Vapor Density (Air = 1): Not Applicable

Solubility in Water: Negligible

Appearance and Odor: Grayish to silvery odorless sheet, strip, plate, bar, structural shapes, pipe and tubing and extrusions.

Specific Gravity (H₂0 = 1): Greater Than 3 % Volatile by Volume (%): Not Applicable **Evaporation Rate:** Not Applicable

SECTION 4 – Fire and Explosion Hazard Data

Flash Point F (C): Not Applicable

Extinguishing Media: Use methods applicable to

surrounding area.

Flammable Limits: Not Applicable

Unusual Fire and Explosion Hazards: None

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products and fire fighting technique or agent(s) applicable to surrounding materials. Small chips, fine turnings, and dust may ignite readily. Use coarse water spray on chips, turnings, etc. Use class D extinguishing agents or dry sand on fines. Do not use halogenated extinguishing agents on small chips or fines. Dust clouds may be explosive. Molten aluminum may explode on contact with water.

DISCLAIMER

RYERSON MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The information contained in this Material Safety Data Sheet (MSDS) is believed to be correct, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material or the results to be obtained from the se thereof. User assumes all risk and liability of any use, processing or handling of any material. Variations in methods; conditions; equipment used to bre, handle or process the material; and hazards in connection with the use of the material are solely the responsibility of the user and remain at its sole

As sold, the product described in this MSDS is considered by Ryerson to be an "article" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910. 1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace or expand the terms contained in Riverson Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required.

Issued By: Joseph T. Ryerson & Son Inc.

Appendix33-000978

	CAS NUMBER:	7429-90-5	7440-21-3	1309-37-1	7410 50 0	ALLOYING ELEM						7.00.00.0	2.40.00.0	7440.00.0
	CAS NUMBER:			1309-37-1	7440-50-8	7439-96-5	7439-95-4	7440-47-3	1314-13-2	7440-32-6	7440-48-4	7439-92-1	7440-69-9	7440-62-2
Grade		*Aluminum	Silicon	Iron	*Copper	*Manganese	Magnesium	*Chromium	*Zinc	Titanium	*Cobalt	*Lead	Bismuth	Vanadium
1100		>99.0	<1.0	<1.0	<0.3	<0.1			<0.1					
2011	•	>91.0	<0.4	<0.7	<6.0				<0.3			<0.6	<0.6	
2017			<0.8	<0.7	<4.5	<1.0	<0.8	<0.1	<0.3	<0.2				
2024			<0.5	<0.5	<4.9	<0.9	<1.8	⊲0.1	<0.3	<0.2				
3003			<0.6	<0.7	<0.2	<1.5			<0.1					
3105			<0.6	<0.7	<0.3	<0.8	<0.8	<0.2	<0.4	<0.1				
5005			<0.3	<0.7	<0.2	<0.2	<1.1	<0.1	<0.3					
5052			<0.3	<0.4	<0.1	<0.1	<2.8	<0.4	<0.1					
5083			<0.4	<0.4	<0.1	<1.0	<4.9	<0.3	<0.3	<0.2				
5086			<0.4	<0.5	<0.1	<0.7	<4.5	<0.3	<0.3	<0.2				
5454			<0.3	<0.4	<0.1	<1.0		<0.2	<0.3	<0.2				
5456			<0.3	<0.4	<0.1	<1.0	<5.5	<0.2	<0.3	<0.2				
6061			<0.8	<0.7	<0.4	<0.2	<1.2	<0.4	<0.3	<0.2				
6063			<0.6	<0.4	<0.1	<0.1	<0.9	<0.1	<0.1	<0.1				
6 2 62		>94.0	<0.8	<0.7	<0.4	<0.2	<1.2	<0.2	<0.3	<0.2		<0.7	<0.7	
7075			<0.4	<0.5	<2.0	<0.3	<2.9	<0.3	<6.1	<0.2				

	*Aluminum	Bismuth	*Chromium	*Cobalt	*Copper	Iron	*Lead	*Manganese	Magnesium	Ozone	Silicon	Titanium	Vanadium	*Zinc
Contaminant and Exposure Limits {mg/m³}	As Welding Fume	Not Listed	As Metal 1 0.5 Chromium II	As Dust and Fume 0.1 0.1	As Copper Dust 1 1	As Total Particulate 10 - As Fe	As Inorganic Pb Dust and Fume 0.05 0.15	As Manganese Dust 5c 5c	As Magnesium Oxide Fume 10,5 resp. 10	As Gas (ppm) 0.1 0.1	10,5 resp. 10	10,5 resp. 10	As Vanadium Pentoxide Dust 0.05 resp. 0.05 resp. As Vanadium	As Zinc Oxide Dust 10,5 resp. 10 As Zinc Oxide
PEL TLV Values are time- weighted averages, except "c"	5 5		and III cpds 0.5 0.5 Chromic Acid and Chromates 0.1c 0.05	0.1 9.1	As Copper Fume 0.1 0.2	- 5	0.03 (J. 13)	Manganese Fume 1,3c 1,3c					Pentoxide Fume 0.05 0.05	Fume 5, 10c 5, 10c

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061

Manufacturer: SANI-FRESH INTERNATIONAL INC. 4702 Goldfield Drive San Antonio, Texas 78213 Emergency Tel. No. 512/5 61-5374

MATERIAL SAFETY DATA SHEET genera, a le les partires de la partire de l SECTION 1 TIDENTIFICATION OF PRODUCT* Date Issued: 11/21/91 Supercedes: 06/27/89 Product Name: HEAVY DUTY SANI-FRESH CLEANSER Product Code: #91214 National Item#: 1127XX OSHA ACGIH EXPOSURE % PEL TLV LIMITS SECTION 2 HAZARDOUS INGREDIENTS CAS # SUDIUM LAURETH SULFATE SUDIUM C14-16 OLEFIN SULFONATE SUDIUM CHLORIDE MIPA-DODECYLBENZENSULFONATE 15-25 9004-82-4 N E ΝE NE 68439-57-6 7647-14-5 42504-46-1 NF NE Non-Hazardous Ingredients* *UNIDENTIFIED INGREDIENTS ARE NOT CONSIDERED HAZARDOUS UNDER THE FEDERAL HAZARD COMMUNICATION STANDARD (29 CFR-1910-1200). SECTION 32 PHYSICAL & CHEMICAL CHARACTERISTICS Boiling Point (F): (212F Vapor Pressure (mm Hg.): (18 Vapor Density (Air=1): (1 Solubility in Water: COMPLETE Evaporation Rate (BuAc=1): (18 By Volume (%) (Minus Water): (20 Appearance and Odor: RED CLEAR GEL Specific Gravity(H_O=1):[_015 TO I_025 PH 5_0 to 6_0 Reactivity In Water: NONE Melting Point: N.E. % Volume (%) (Minus Water): < 2) Section 4. FIRE AND EXPLOSION DATA Flash Point: N/A Method Used: N/A Flammable Limits in Air % By Volume: LEL= N/A Auto-Ignition Temperature: N/A Extinguishing Media: USE MEDIA SUITABLE FOR SURROUNDING MATERIALS Special Fire Fighting Procedures: NO SPECIAL PROCEDURES REQUIRED Unusual Fire & Explosion Hazards: NONE KNOWN SECTION 5. REACTIVITY DATA Stabitity: NORMALLY STABLE USE CONDITIONS. Conditions to Avoid: NONE UNDER NORTAL Incapability - Materials to Avoid: STRONG OXIDIZERS Hazardous Polymerization: DOES NOT OCCUR Hazardous Decomposition Products: CARBON MOOXIDE, CARBON DIDXIDE SECTION 6 SPECIAL PRECAUTIONS AND SPILL, LEAK PROCEDURES Precautions to Be Taken In Handling And Storage: RECOMMEND STORAGE BETWEEN 40 F (5 C) AND 100 F (37 C). Steps to Be Taken In Case Material is Released Or Spilled: CLEAN UP WITH ABSORBENT MATERIAL Waste Disposal Methods: (Consult Federal, State and Local Regulations): FLUSH WASTE TO SEWER WITH LARGE AMOUNTS OF WATER, IF PERMUTTED BY LOCAL, STATE AND FEDERAL REGULATIONS. THIS PRODUCT IS NOT A HAZARDOUS WASTE UNDER CURRENT RCRA REGULATIONS.

MATERIAL SAFETY DATA SHEET

Manufacturer: SANI-FRESH INTERNATIONAL, INC. 4702 Goldfield Drive San Antonio, TX 78218 Emergency Tel. No. 512/661-5374

MATERIAL SAFETY DATA SHEET
SECTION 1. IDENTIFICATION OF PRODUCT
Product Name: WATERLESS SANI-FRESH CLEANSER Date Issued: 06/21/91 Supercedes: 05/17/89
Product Code: 91215 National Item#: 1128XX
SECTION 2. INGREDIENTS OSHA ACGIH EXPOSURE % CAS # PEL TLV LIMITS
D-LIMONENE (DIPENTENE) NE NE NE 5-25 138-86-3 MINERAL OIL (AS MIST) Smg/m3 NE 5-15 8042-47-5 TRIETHANOLAMINE NE NE <5 102-71-6 C11-C12 ISOPARAFFIN NE NE 300ppm 5-25 64742-48-9 OLEIC ACID NE NE <5 112-80-1 POLYETHYLENE* NE NE 0-5 9002-88-4
UNIDENTIFIED INGREDIENTS ARE NOT CONSIDERED HAZARDOUS UNDER THE FEDERAL HAZARD COMMUNICATION STANDARD (29 CFR-1910.1200). * WATERLESS WITH GRIT CONTAINS POLYETHYLENE AND WATERLESS DOES NOT CONTAIN POLYETHYLENE.
SECTION 3. PHYSICAL & CHEMICAL CHARACTERISTICS
Boiling Point (F): NE Specific Gravity (H2O=1): 0.882 Vapor Pressure (mm Hg.): NE PH: 7.5 to 8.5 Vapor Density (Air=1): NE Reactivity in Water: NONE Solubility in Water: APPRECIABLE Melting Point: N/A Appearance and Odor: WHITE CREAMY LOTION WITH CITRUS ODOR.
Section 4. FIRE AND EXPLOSION DATA
Flash Point: 145F Method Used: PENSKE-MARTENS CLOSED CUP ASTM D-93 Flammable Limits In Air % By Volume: LEL=NE UEL=NE UEL=NE UEL=NE Auto-Ignition Temperature: NE Extinguishing Media: FOAM, DRY CHEMICAL OR CARBON DIOXIDE. Special Fire Fighting Procedures: USE SUPPLIED-AIR BREATHING EQUIPMENT FOR ENCLOSED OR CONFINED SPACES OR AS OTHERWISE NEEDED. Unusual Fire & Explosion Hazards: NONE KNOW TO SANI-FRESH
SECTION 5. PHYSICAL HAZARDS (REACTIVITY DATA)
Stability: STABLE Conditions to Avoid: NORMALLY STABLE. AVOID HEAT, OPEN FLAMES. Incompatibility - Materials to Avoid: STRONG DXIDIZERS (SUCH AS LIQUID CHLORINE AND SODIUM HYPOCHLORITE). Hazardous Polymerization: WILL NOT OCCUR Hazardous Decomposition Products: FUMES, SMOKE CARBON MONDXIDE AND OTHER DECOMPOSITION PRODUCTS IN CASE OF INCOMPLETE COMBUSTION
SECTION 6. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES
Precautions To Be Taken In Handling And Stronge: RECOMMEND STORAGE BETWEEN 40F AND 100F Other Precautions: NONE Steps To Be Taken In Case Material Is Released Or Spilled: REMOVE HEAT AND IGNITION SOURCES; VENTILATE THE AREA; CLEAN UP WITH ABSORBENT.
Waste Disposal Methods (Consult Federal, State & Local Regulations): FLUSH WASTE TO SEWER WITH LARGE AMOUNTS OF WATER, IF PERMITTED BY LOCAL, STATE AND FEDERAL REGULATIONS. Note: THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS OF REPORTABLE QUANTITIES ON THE CURRENT COMMUNITY RIGHT-TO-KNOW SECTION 313, TITLE III LIST.

SECTION 7. HEALTH HAZARDS EYE IRRITATION, UPSET STOMACH Acute: Chronic: NE
Chronic: NE
Signs 8 Symptoms of Exposure: REDNESS AND ITICHING OF EYES
Medical Conditions Generally Aggravated By Exposure: NE
Chemical Listed as Carcinogen or Portential Carcinogen:
National Toxicology Program: NO
I:A.R.C. Monographs: NO Emergency First Aid:
Emergency First Aid:
Eyes: IMMEDIATLY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15'
MINUTES WHILE HOULDING THE EYE LIDS OPEN. GET PROMPT MEDICAL ATTENTION.
Ingestion: CONTACT LOCAL POISON CONTROL CENTER OR PHYSICIAN
IMMEDIATELY. Routes Of Entry: Inhalation: HIGHLY UNUSUAL Eyes: MAY OCCUR Skin: MAY OCCUR BUT UNLIKELY Ingestion: MAY OCCUR SPECIAL PROTECTION INFORMATION/CONTROL MEASURES SECTION 8. Respiratory Protection: NOT NORMALLY REQUIRED Ventilation: NOT GENERALLY NEEDED Local Exhaust: ADEQUATE — lechanical: ADEQUATE Special: N/A Other: N/A Protective Gloves: NOT NORMALLY NEEDED Eye Protection: IF POTENTIAL FOR EYE CONTACT EXISTS, WEAR CHEMICAL ĞOĞĞLES. Other Protective- Clothing or Equipment: NONE NORMALLY REQUIRED. Work/Hygienic Practices: CLEAN-UP ALL SPILLS IMMEDIATELY. PRACTICE GOUP PERSONAL HYGIENE
Hazardous Materials Identification System Rating (HMIS)
HEALTH -1 FIRE -2 REACTIVITY -0
PERSONAL PROTECTION -A (SAFETY GLASSES)
NOTES: THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT SHOULD BE MADE BY THE MATERIAL USER BASED ON THE PARTICULAR PLANT CONDITIONS WHERE THE MATERIAL IS TO BE USED TOGETHER WITH INFORMATION CONTAINED IN THE PRODUCT M.S.D.S. CLEAN-UP ALL SPILLS IMMEDIATELY. PRACTICE GOOD

THIS MATERIAL SAFETY DATA SHEET PERTAINS TO ALL SANI-FRESH AND SANI-TUFF WATERLESS AND WATERLESS WITH GRIT CLEANSERS.

NE HEANS NOT ESTABLISHED

N/A MEANS NOT AVAILABLE

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS AATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.

AFETY DATA SH (84020601) ntification —	1400115	1-ot-2 7 H 9 J
ntification -	<u></u>	, , , , , , ,
••••••	10%)
<u>xt)</u> /1	1001/8 1191	د برسی
<u> </u>	TOOL B H /	. DGA
-	• .	•
ب الإي ويون و الكامل الأن الإي مي بي بي ويون ويون ويون ويون ويون ويون وي	•	·
ent! PEL	1 TLV	INTP
NA NA	NA ·	1
1 NA	-5ppm / IWA	
	1 /	
		1
	1 1	
<u> </u>		_1
		
sure: Includi	nd Sidne 1 Sum	rtons:
		tty
aggi avaced. Not	OC ILI MITTER	
	_	
mmable Limits	LEL ND	
	VI.1 3/-	
	, <u> </u>	•
	ent: PEL NA	ent! PEL 1 TLV NA NA NA NA Sppm / IWA ic Gravity(H20=1): 0.91 tile by Volume 0.01 etion Rate: 0.01 odor d Data ontact-IX 3 Skin Absorpti



Material Safety Data Sheet

CHEVRON RPM Universal Gear Lubricant SAE 80W-90

CPS225040

Page 1 of 6

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: November 26, 1991
This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS.

This is a new Material Safety Data Sheet.

1. PRODUCT IDENTIFICATION

CHEVRON RPM Universal Gear Lubricant SAE 80W-90

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS225040

PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004552 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004552

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 392F (200C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004552

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark green liquid.

BOILING POINT: NDA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.90 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 14 cSt @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour), SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5~mg/m3, the OSHA PEL is 5~mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004552

NDA - No Data Available NA - Not Applicable

{

100.0 % CHEVRON RPM Universal Gear Lubricant SAE 80W-90

CONTAINING

> 90.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 10.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1. Immediate (Acute) Health Effects; NO

Delayed (Chronic) Health Effects; NO

3. Fire Hazard; NO

4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO

None of the components of this material are found on the regulatory lists shown below.

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	27=TSCA Sect 8(e)
28=Canadian WHMIS	29=OSHA CEILING	30=TSCA Sect 8 FYI

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004552

7,00

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004552



ZEP MANUFACTURING COMPANY P.O. BOX 2015 ATLANTA, GEORGIA 30301

A

ASHGROVE CEMENT WEST INC 13939 N RIVERGATE BLVD PORTLAND, OR 97203

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

01/08/92

ISSUE DATE: 12/09/91 **SUPERSEDES: 04/23/90**

ZEP OLD SMOKY

PRODUCT NUMBER: 0071

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680 BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(404) 435-2973 NON-OFFICE HOURS, WEEKENDS (404) 351-2952 AND HOLIDAYS, PLEASE CALL YOUR

(404) 432-2873

LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(404) 922-0923

CHEMTREC:

1-800-424-9300 DISTRICT OF COLUMBIA:

TOLL-FREE - ALL CALLS RECORDED

400

(202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

** ISOPROPYL ALCOHOL ** ipa; dimethylcarbinol; 2-propanol; CAS# 67-63-0; RTECS# NT8050000; OSHA PEL-400

EFFECTS (PPM) (SEE REVERSE)

PROD.

PPM; OSHA/ACGIH STEL-500 PPM

IRR FBL

10-20

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

EYE IRRITANT. EYE CONTACT MAY PRODUCE STINGING, BURNING, INFLAMMATION, AND IN EXTREME CASES MAY PRODUCE CORNEAL DAMAGE. EXPOSURE MAY BE IRRITATING TO SKIN, AND UPPER RESPIRATORY TRACT. ACCUMULATION OF HARMFUL QUANTITIES OF VAPOR IS PRECEDED BY SEVERE IRRITATION WHICH MAKES OVER-EXPOSURE UNLIKELY. OVER-EXPOSURE CAN RESULT IN MILD NARCOTIC EFFECTS, INCLUDING FLUSHING, HEADACHE, DIZZINESS, AND NAUSEA. EXISTING SKIN, EYE OR RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE.

Chronic Effects of Overexposure:
REPEATED OR PROLONGED, SKIN CONTACT MAY PRODUCE SOME DRYNESS OF SKIN. CHRONIC EFFECTS FROM ALCOHOL VAPORS ARE RARE AND WOULD RESULT FROM SEVERE, PROLONGED, AND REPEATED CONTACT, WHICH IS USUALLY PRECLUDED BY IRRITATION. IN MOST EXTREME CASES, NARCOSIS, JNCONSCIOUSNESS, AND DEATH COULD RESULT. NONE OF THE INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, OR OSHA.

ist'd PEL/TLV: NOT ESTABLISHED

Primary Routes of Entry: INH.

HMIS Codes: HEALTH 1;FLAM. 1;REACT. 0;PERS. PROTECT. B ;CHRONIC HAZ. NO

FIRST AID PROCEDURES:

IMMEDIATELY FLUSH CONTAMINATED SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS. Skin: IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, GET MEDICAL Eves

ATTENTION AT ONCE

MOVE EXPOSED PERSON TO FRESH AIR, IF IRRITATION PERSISTS, GET MEDICAL ATTENTION PROMPTLY. inhale:

THIS ROUTE OF EXPOSURE IS NOT LIKELY DUE TO PRODUCT NATURE. indest:

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing:

THE USE OF NEOPRENE, NITRILE OR NATURAL RUBBER GLOVES IS STRONGLY RECOMMENDED, ESPECIALLY FOR PROLONGED CONTACT.

Eye Protection:

USE OF TIGHT-FITTING SAFETY GLASSES OR GOGGLES IS STRONGLY RECOMMENDED, ESPECIALLY WHEN WEARING CONTACT

LENSES

Respiratory Protection: Ventilation:

AVOID INHALATION OF SPRAY MISTS, AND DO NOT DIRECT SPRAY TOWARD PEOPLE.

VENTILATION SHOULD BE EQUAL TO OUTDOORS. USE EXHAUST FANS AND/OR EXHAUST HOOD IN ENCLOSED SPACES.

SECTION V - PHYSICAL DATA

Boiling Point (°F): AP Percent Volatile by Volume (%): 99

APPROX, 205E

Specific Gravity: Vapor Density (air = 1):

0.95 N/A

Vapor Pressure (mmHg): Evaporation Rate (WATER = 1):

N/A

Solubility in Water: COMPLETE pH (concentrate): 9.7
Appearance and Odor: A CLOUDY, THIN, COLORLESS LIQUID WITH A PLEASANT FRAGRANCE

pH (use dilution of N/A):

N/A

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (°F) (method used): NOT FLAMMABLE (CSMA) Flammable Limits: LEL N/A UEL N/A

CARBON DIOXIDE, DRY CHEMICAL AND FOAM.

Extinguishing Media: Special Fire Fighting: Unusual Fire Hazards:

WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS

DIRECT WATER ONTO INTACT CONTAINERS TO PREVENT BURSTING.

FEB LOTE

ZEP MANUFACTURING COMPANY

MATERIAL SAFETY DATA SHEET PAGE 2 SECTION VII - REACTIVITY DATA

Stability: Incompatibility (avoid):

Polymerization: Hazardous Decomposition: WILL NOT OCCUR.

HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS

CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED ORGANIC COMPOUNDS.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

OBSERVE SAFETY PRECAUTIONS IN SECTIONS 4 & 9 DURING SPILL CLEAN-UP, LARGE SPILLS ARE UNLIKELY DUE TO PACKAGING, SPILL MAY BE ABSORBE... ON AN INERT ABSORBENT (eg ZEP-O-ZORB), PLACED IN A SUITABLE CONTAINER FOR DISPOSAL, WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

Waste Disposal Method:

PRODUCT IS CONSUMED IN USE. DO NOT CRUSH, PUNCTURE OR INCINERATE SPENT CONTAINERS. LARGE NUMBERS OF AEROSOL CONTAINERS MAY REQUIRE HANDLING AS A HAZARDOUS WASTE, BUT IN MOST STATES TOTAL HAZARDOUS WASTE QUANTITIES LESS THAN 220 LBS PER MONTH MAY ALLOW DISPOSAL IN A CHEMICAL OR INDUSTRIAL WASTE LANDFILL. CONSULT LOCAL, STATE AND FEDERAL AGENCIES FOR THE PROPER DISPOSAL METHOD IN YOUR AREA.

RCRA Hazardous Waste Numbers: N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:
DO NOT STORE AT TEMPERATURES ABOVE 120F. OR IN DIRECT SUNLIGHT. DO NOT PUNCTURE OR INCINERATE CONTAINER. DO NOT BREATHE SPRAY MISTS OR VAPORS. KEEP PRODUCT OUT OF EYES. KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

OOT Proper Shipping Name: CONSUMER COMMODITY

DOT Hazard Class: N/A

DOT I.D. Number: N/A

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED EPA CWA 40CFR Part 117 substance (RQ in a single container): : NONE

DOT Label/Placard: ORM-D

NOTICE

Thank you for your interest in, and use of, Zep products. Inank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supprying this Material Salety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equip-ment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Salety Data Sheet. Data Sheet

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (fliquid and/or vapor) and can be dangerous. OO MOT pres-surize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ABBREVIATIONS USED IN THE MSDS: BY SECTION ALPHABETICALLY:

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen • A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible —man

cancer causing agent. CAS #: Chemical Abstract Services Registry Num universally accepted numbering system for chemical sub-

CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester. CNS: Central Nervous System depressant reduces the activ-

ity of the brain and spinal cord. COR: Corrosive - Causes irreversible alterations in living tissue (e.g. burns).

DESIGNATIONS; Chemical and common names of hazardous

ingredients.

EIR: Eye Irritant Only - Causes reversible reddening and/or

EIN: EYE ITHIAIN Only - Causes for ISSUE CAUSE.

EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling ISSUE).

ACGIH; American Conference of Governmental Industrial Hygienists.

CEILING: The concentration that should not be exceeded

or the workplace during any part of the working exposure. OSHA: Occupational Safety and Health Administration PEL: Permissible Exposure Limit-A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM; Parts per million - unit of measure for exposure limits

(S) SKIN; Skin contact with substance can contribute to

overall exposure.

STEL: Short Term Exposure Limit- Maximum concentration

for a continuous 15-minute exposure period.

for a continuous 15-minute exposure period.

7LV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBL: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

MAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

MTX: Highly toxic - the probable lethal dose for 70 kg (150)

HTX: Highly toxic - the probable lethal dose for 70 kg (150 tb.) man and may be approximated as less than 6 teaspoons (2 tablespoons). IRR: Irritant - Causes reversible effects in living tissues (e.g.

inflammation) - primarily skin and eyes.

N/A: Not Applicable - Category is not appropriate for this product. N/D: Not Determined - Insufficient information for a deter-

mination for this item. RTECS#: Registry of Toxic Effects of Chemical Substances

an unreviewed listing of published toxicology data on chemical substances. SARA: Superfund Amendments and Reauthorization Act -

Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated exposure.

TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relativety short time.
CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time.
ESTD PEUTLY: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value hould corne a guide for provided uct as a whole. This value should serve as guide for provid-

uct as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.

HMIS CODES; Hazardous Material identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a bigh of 4. A chronic hazard is indicated. a low of zero to a high of 4. A chronic hazard is indicted with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective

equipment.

PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a general-ized-systemic or specific organ toxic effect.

ING: Ingestion A primary route of exposure through swallowing of material.

INH; Inhalation · A primary route of exposure through

SKIN: A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks, MSHA; Mine Safety and Health Administration NIOSH: National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE: it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water), pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline

PERCENT VOLATILE; The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure.

SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expected to be produced upon product decomposition or fire. INCOMPATIBILITY: Material contact and conditions to avoid

to prevent hazardous reactions. POLYMERIZATION: Indicates the tendency of the product's

molecules to combine in a chemical reaction releasing exess pressure and heat. STABILITY: Indicates the susceptibility of the product to

spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS: RCRA (Resource Conservation and Re-covery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

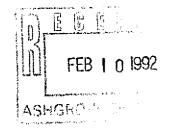
SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act.

RQ; Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies. TSCA: Toxic Substances Control Act - a tederal faw requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or the fallure to follow instructions, warnings, and advisories in the product's label and Material Safety Date Sheet.



(Notice Revised 8/91)



Material Safety Data Sheet

CHEVRON 2-Cycle Oil

CPS226486

Page 1 of 7 '

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: December 12, 1991

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information

incorporated in your MSDS. Discard any previous edition of this MSDS. Changes have been made throughout this Material Safety Data Sheet.

1. PRODUCT IDENTIFICATION

CHEVRON 2-Cycle Oil

Read the entire document.

CAUTION! - MAY CAUSE EYE AND SKIN IRRITATION

- COMBUSTIBLE

- KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS226486

PRODUCT INFORMATION: (800)582-3835

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563

NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary. However, if irritation persists, see a doctor.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is slightly irritating to the eyes and could cause prolonged (days) impairment of your vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, swelling, redness, and blurred vision.

SKIN IRRITATION:

This substance is a moderate skin irritant so contact with the skin could cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain or a feeling of heat, discoloration, swelling, and blistering.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

Prolonged breathing of vapors can cause central nervous system effects. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However,

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563

it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (P-M) 124F (51C) (Min.)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NDA Upper: NDA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 1; Flammability 2; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 F.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Blue liquid.

BOILING POINT: NDA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6 C

VAPOR PRESSURE: NDA

PERCENT VOLATILE (VOLUME %): 20% Approx.

VAPOR DENSITY (AIR=1): NA VISCOSITY: 30.2 cst @ 40C Min.

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

Certain geographical areas have air pollution restrictions concerning the use of materials in work situations which may release volatile components to the atmosphere. Air pollution regulations should be studied to determine if this material is regulated in the area where it is to be used.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563

NDA - No Data Available NA - Not Applicable

(

environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON 2-Cycle Oil

CONTAINING

> 70.0 % LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING

RESIDUAL OILS SOLVENT DEWAXED

CAS64742627 5mg/m3 mist ACGIH TLV

> 10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

RESIDUAL OILS HYDROTREATED

CAS64742570 5mg/m3 mist ACGIH TLV

> 10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547 5mg/3 mist ACGIH TLV

> 10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

CAS64742650

< 20.0 % DISTILLATES, HYDROTREATED LIGHT

CAS64742478

< 10.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity
RQ - Reportable Quantity CPS - CUSA Product Code
CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563

10. REGULATORY INFORMATION

DOT basic descriptions can vary based on package quantity and may not coincide with international description requirements. Consult the Hazardous Materials Regulations in 49CFR and the appropriate Dangerous Goods Regulations to confirm description applicability to specific shipments.

DOT SHIPPING NAME: PETROLEUM NAPHTHA MIXTURE

DOT HAZARD CLASS: COMBUSTIBLE LIQUID DOT IDENTIFICATION NUMBER: UN1255

SARA 311 CATEGORIES:

- 1. Immediate (Acute) Health Effects; YES
- Delayed (Chronic) Health Effects; NO
- 3. Fire Hazard; YES
- 4. Sudden Release of Pressure Hazard; NO
- 5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

RESIDUAL OILS HYDROTREATED

is found on lists: 14,15,17,

RESIDUAL OILS SOLVENT DEWAXED

is found on lists: 14,15,17,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A.

34:5A-1 et. seq., the product is to be identified as follows:

CAS# 64742627 RESIDUAL OILS SOLVENT DEWAXED

CAS# 64742570 HYDROTREATED BOTTOMS

CAS# 64742547 HYDROTREATED HEAVY PARAFFINIC DISTILLATES
CAS# 64742650 DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

New Jersey Right-to-Know trade secret registry number 01154100-5023P

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563

NDA - No Data Available NA - Not Applicable

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the combonents.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data on the components.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking; or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 3 Revision Date: 12/04/91 MSDS Number: 004563

NDA - No Data Available NA - Not Applicable

PRODUCT NAME

SSF 727/725

Refer to Material Safety Data Sheet for more information.

SPOKANE STEEL FOUNDRY

CO.

P.O. BOX 3305

SPOKANE, WASHINGTON 99220 U.S.A.

3220 : U.S.A.

AREA CODE 509 924 0440

FIRE HAZARD

EXTREMELY DANGEROUS FIRE AND EXPLOSION HAZARD.
FIRE AND EXPLOSION HAZARD AT NORMAL TEMP

2. WILL BURN AT TEMPS ABOVE 100 F

O. WILL NOT BURN

HEALTH

HAZARD-

POXIIIRO (COMUNICIE OR

BRIMITION COME

SEVERE HYMARD

JUSE SPECIAL CLOPHING AND WASKS

2. HAZARDOÙS — ÚSDT MASKS OR SPECIEAL VONDPICLARION

Sinterport in various

O. NORMAL WATERIAL

USE NO WATER

FOLIGIERUZZES

ANSTR WARNENCH WARLDEING, CUPULANG OR GRENDING ON THUS CASIDENG WILL GENERALE TOXIC DUST OR FUMES

INGREDIENTS

(PERCENT)

-Chromium 크rom Nickel 25.0 - 30.0 Balance 0 - 9.0

See Material Safety Data Sheet for a listing of minor ingredients.

Light Toxungaerie (\$0.000.000) =

VACANICE (\$0.000.000)

CONSTRUCTOR (\$0.000.000)

OVER ON BUSINE

REACTIVITY

HAZARD

SEVERE DXPLOSEON HAZARD

VIOLENT CHEMICAL

UNSIVABILD IID BOOMDI

NORWALLY SILVER

STORAGE AND HANDLING

No Special Precautions

PAGE

MATERIAL SAFETY DATA SHEET (MSDS) DATE 1-2-92 __ CODE 06-04

CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: Chromium based Iron Castings

ASTM No.

ACI alloy designation (Grades)

A532

Class III

VENDOR NAME AND ADDRESS:

Spokane Steeel Foundry

P.O. Box 3305

Spokane, Washington

99220

EMERGENCY PHONE NUMBER:

(509) 924-0440 ____

FIRE HAZARD CLASS:

HEALTH:

FLAMMABILITY: O

REACTIVITY:

THE FOURTH DIAMOND:

ANSI:

WARNING! WELDING, CUTTING, OR GRINDING ON THIS CASTING

WILL GENERATE TOXIC DUST OR FUMES.

SECTION II - HAZARDOUS COMPONENTS

Refer to				
U INGREDIENT	das no.	PERCENT	TLV	PEL
Jarbon Jhromium Chromium (VI)*	7440-44-0 7440-47-3	2.60-2.80 25.5-30.0	N/E 0.5 mg/cu.m	N/E 1 mg/cu·m
(certain insoluble forms) Cobalt Columbium (same as Niobium)	7443-48-4	0-3/50 0-0.35	0.5 mg/cu.m 0.1 mg/cu.m N/E	N/E 0.1 mg/cu.m N/E
Copper (as dust)	7440-50-8	0-3.25	1.0 mg/cu.m	1.0 mg/cu.m
(As fume) Tron (as fume) Manganesc (as dust) (As fume)	7439-89-6 7439-96-5	balance 0.35-1.00	0.2 mg/cu.m 5 mg/cu.m C 5 mg/cu.m 1 mg/cu.m	0.1 mg/cu.m 10 mg/cu.m C 5 mg/cu.m C 5 mg/cu.m
Molybdenum Hickel	7439-98-7 7440-02-0	0.3040 0-9.0	10 mg/cu.m 1 mg/cu.m	15 mg/cu.m 1 mg/cu.m
Mitrogen Phosphorus Silicon	7727-37-9 7723-14-0 7440-21-3	0-0.18 0.02-0.060 0.50-0.60	N/E 0.1 mg/cu.m 10 mg/cu.m	N/E 0.1 mg/cu.m 15 mg/cu.m
Bulfur	7704-34-9	0.02-0.040	(as nuisan N/E	ce) N/E
Tungsten Vanadium	7440-33-7	0-1.25 0-1.00	5 mg/cu.m	N/E
(as vanadium oxide) (As dust) (As fume)	1314-62-1			0.5 mg/cu.m 0.1 mg/cu.m

C means ceiling limit. these are limits which should not be exceeded, even for a short time. all other are 8 hr Timeweighted average concentrations.

Elements having a listed percentage greater than zero will be present in all grades. Those having a value of "o" may not be present in certain grades. Refer to Steel Founders' Society of America "Steel Castings handbook" Supplement 2 for specifications on a particular ASTM alloy and grade.

* Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Governmental Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

N/E means none established. N/A means not applicable. N/D means no data available.

Appendix33-001001

SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form at room temperature.

Dust or fumes are generated by machining, grinding, or welding on these castings. Since the castings contain a high percentage of iron, most of the dust or fume will be iron or iron oxide. There is no TLV for iron dust, but available information indicates that a concentration of 10 mg/cu.m., as if it were a nuisance dust, will serve as a guideline until a TLV is established.

Overexposure to iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung. It can be seen on a chest x-ray but causes little or no disability. Also see the Material Safety Data Sheet for the welding rod being used.

Since these castings contain up to 30 percent chromium, and up to 9 percent nickel, airborne contaminants from machining or welding will contain chromium and nickel dust or fume. If total welding fume is adequately controlled, chromium and nickel will also be controlled.

Welding or flame cutting may convert a small fraction of the chromium to the water insoluble hexavalent (carcinogenic) form.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting process no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

Some grades contain moderate levels of manganese. Long term overexposure to manganese dust or fume can cause manganese poisoning. If welding or flame cutting fume is controlled to the TLV for total fume, the manganese fume will also be controlled.

Grinding on castings that have not been cleaned or that contain embedded sand may generate significant amounts of dust containing free silica, which can cause silicosis.

Carbon, cobalt, copper, niobium, nitrogen, molybdenum, phosphorus, silicon, sulfur, tungsten, and vanadium are also contained in the castings in low amounts. Overexposure to these would not be likely. If airborne concentrations of total dust and fume are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor BOILING POINT: variable depending on casting grade

VAPOR PRESSURE: N/A

VAPOR DENSITY: N/A

SOLUBILITY IN WATER: N/A

N/E means none established. N/A means not applicable. N/D means no data available.

Appendix33-001002

SPE IFIC					
PERCENT					N/A
EVAPORAT	LION	RATE	_ N	/A	

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

SKIN: None known,

BREATHING: Prolonged or repeated overexposure to iron oxide produced in grinding or welding may cause siderosis. Overexposure to manganese dust can cause manganism. Symptoms of manganism 'are sleepiness, weakness in the legs, emotional disturbances, uncontrollable laughter, and spastic gait. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases. SWALLOWING: N/A

NOISE: Grinding or machining castings is noisy. The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA), hearing conservation program required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

IF IN EYES: Metal particles should be removed by trained individuals such as a nurse or physician.

IF ON SKIN: N/A

IF BREATHED: (Fumes from welding): Move to fresh air.

IF SWALLOWED: N/A

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

INCOMPATIBILITY: Chromium metal dust may burn or explode when in contact with ammonium nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. may be classed as a 'hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

N/E means none established. N/A means not applicable. N/D means no data available.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dusts or fume if concentrations exceed the TLV or PEL.

VENTILATION: Provide general ventilation and/or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arc-air gouging or cutting, or welding on castings.

If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

INFORMATION PRESENTED, HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE RELIABLE AND IS ACCURATE AND RELIABLE TO THE BEST OF OUR KNOWLEDGE AND BELIEF BUT IS NOT GUARANTEED TO BE SO.

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 Emergency No. 1-800-535-5053 (NFOTRAC) Call Nearest Sales Office for MSDS Information MATERIAL SAFETY DATA SHEET CTION 1. IDENTIFICATION OF PRODUCT* Chemical Name And Synonyms: SODIUM BORATE ANHYDROUS
Chemical Family: SOAP FAMILY SECTION 2. INGREDIENTS CAS # OSHA PEL ACGIH TLV SODIUM TETRABORATE DECAHYDRATE 1303~96-4 10 MG/M3 5 M/GM3 SECTION 3. PHYSICAL DATA Boiling Point (F): NA Specific Gravity (H20=1) N Vapor Pressure (mm Hg.): NA Melting Point: N/A Vapor Density (Air=1): NA Evaporation Rate (ButylAcet Solubility in Water: COMPLETE PH Range: 77F Appearance and Odor: POWDER, ODORLESS PINK OR WHITE (AS PREFERRED) Specific Gravity (H20=1) N/E Melting Point: N/A Evaporation Rate (ButylAcetate=1): N/A FIRE AND EXPLOSION HAZARD DATA Flash Point (Test Method): NON COMBUSTIBLE Flammable Limits: N/A LEL= Extinguishing Media: PRODUCT IS FIRE RETARDANT Special Fire Fighting Procedures: NONE Unusual Fire & Explosion Hazards: NONE-FIRE RETARDANT SECTION 5. REACTIVITY DATA "ability: EXCELLENT, STABLE Conditions to Avoid: NONE ...compatibility - Materials to Avoid: N/A Hazardous Polymerization: WILL NOT OCCUR Conditions to Avoid: NONE Hazardous Decomposition ByProducts: NONE KNOWN SECTION 6. PRECAUTIONS FOR SAFE HANDLING AND USE Steps to Be Taken in Case Material Is Released or Spilled:

Small Spill: SWEEP UP MATERIAL FOR DISPOSAL OR RECOVERY. Large Spill: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.

Waste Disposal Method: Small Spill: PACKAGE MATERIAL IN PAPER AND DEPOSIT IN LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. Large Spill: DEPOSIT IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061

Manufacturer: CLDE TYME PRODUCTS, INC. 1253 E.Artesa Carson, CA 90746 Emergency Tel. Nc. 213/537-4311 OR 800-445-8190

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT Product Name: BRITE BCY METAL POLISH Chemical Name: NA-MIXTURE Chemical Family: NA-MIXTURE Date Issued: 01/17/92 Supercedes: 11/08//89 National Item#: 3242XX SECTION 2. INGREDIENTS CAS NUMBER PERCENT TLV UNITS AMMONIA HYDROXIDE OXALIC ACID 7664417 144627 25 PPM 1 MG/M3 SECTION 313 SUPPLIER NOTIFICATION: THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 AND OF 40 CFR 372: CAS# NONE CHEMICAL NAME PERCENT BY WEIGHT IS INFORMATION MUST BE INCLUDED IN ALL MSDS'S THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL. SECTION 3. EMERGENCY AND FIRST AID ACUTE HEALTH HAZARDS CONTAINS AMMONIA, AVOID CONTACT WITH EYES. INCASE OF EYE CONTACT, FLUSH WITH WATER FOR 15 MINUTES. CALL PHYSICIAN. IF SWALLOWED, INDUCE VOMITING. ALL PHYSICIAN. CARCINOGENICITY: NO ECTION 4. PHYSICAL DATA Specific Gravity (Water=1): N/A Vapor Density (Air=1): N/A Solubility in Water: COMPLETE Evaporation Rate (Physical Form: LIQUID =1): N/AOFF WHITE, AMMONIA ODOR Appearace: Section 5. FIRE AND EXPLOSION HAZARD DATA Flash Point (Test Method): NON-COMBISTIBLE Extinguishing Media: NOT APPLICABLE Special Fire Fighting Procedures: NA Unusual Fire and Explosion Hazards: NA Hazardous Thermal Decomposition Products: CC, CO2 (1010)SECTION 6. REACTIVITY DATA Stability: Conditions to Avoid: Incompatibility - Materials to Avoid: NONE Hazardous Polymerization: WILL NOT OCCUR Conditions to Avoid: Hazardous Decomposition Products: N/A HIGH TEMPERATURES . POCR VENTILATION Conditions To Avoid: SECTION 7. SPILL, LEAK PROCEDURES

Steps To Be Taken In Case Material Is Released or Spilled: WASH AWAY WITH WATER.

rimary Route(s) of Entry: EYES, HANDS

Waste Disposal MMethod: RCRA HAZARDOUS WASTE - NC FOLLOW ALL FEDERAL, STATE AND LOCAL WASTE DISPOSAL REGULATIONS.

MATERIAL SAFETY DATA SHEET Product Name: BRITE BCY METAL POLISH Date Issued: 01/17/92 PAGE 2

SECTION 8. SPECIAL PROTECTION INFORMATION

Respiratory Protection: REQUIRED - NO

Ventilation: REQUIRED - YES Type: LOCAL EXHAUST

Eye Protection: REQUIRED - NO

Skin Protection: REQUIRED - NO

SECTION 9. SPECIAL PRECAUTIONS

Precautions To Be Taken In Handling And Storing: KEEP OUT OF REACH OF CHILDREN.

ECTION 10. EFFECTS OF LONG TERM EXPOSURE

UNKNOWN

SECTION 11. DOT PROPER SHIPING NAME/HAZARD CASS

NOT DOT HAZARD

THIS FORM COMPLIES WITH OSHA'S HAZARD COMMUNICATION STANDARD, 29CFR 1910-1200. EQUIVALENT TO OSHA FORM 174.

THIS INFORMATION IS GIVEN WITHOUT A WARRANTY OR REPRESENTATION. WE DO NOT ASSUME ANY LEGE RESPONSIBILITY FOR SAME, NOR DO WE GIVE PERMISSION, INDUCEMENT, OR RECOMMENDATION TO PRACTICE ANY PATENTED INVENTION WITHOUT A LICENSE. IT IS OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATIO AND VERIFICATION. BEFORE USING ANY PRODUCT, READ ITS LABEL.



Material Safety Data Sheet

CHEVRON Moly Grease EP NLGI 2

CPS255660

Page 1 of 7

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to indicate name change from "CHEVRON Moly EP Grease NLGI 2" to "CHEVRON Moly Grease EP NLGI 2"

1. PRODUCT IDENTIFICATION

CHEVRON Moly Grease EP NLGI 2

PRODUCT NUMBER(S): CPS255660
PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 01/21/92 MSDS Number: 005062 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Note to Physician: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This

Revision Number: 1 Revision Date: 01/21/92 MSDS Number: 005062

NDA - No Data Available NA - Not Applicable

hazard evaluation is based on data from similar materials.

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required.

VENTILATION:

No special ventilation is necessary.

5. FIRE PROTECTION

FLASH POINT: NA AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur and nitrogen. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NA.

STABILITY:

Stable.

Revision Number: 1 Revision Date: 01/21/92 MSDS Number: 005062 NDA - No Data Available NA - Not Applicable

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Grey-colored grease.

BOILING POINT: NA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.98 @ 20/20C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 200 cSt @ 40C (oil)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problem.

Clean up spills immediately.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Moly Grease EP NLGI 2

Revision Number: 1 Revision Date: 01/21/92 MSDS Number: 005062

NDA - No Data Available NA - Not Applicable

CONTAINING

< 90.0 % DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC

CAS64742525 5 mg/m3 mist ACGIH TLV

10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547 5mg/3 mist ACGIH TLV

> 10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

< 5.0 % MOLYBDENUM DISULFIDE CAS1317335 10 mg/m3 MO ACGIH TLV

< 5.0 % LITHIUM BASE THICKENERS

< 1.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity
RQ - Reportable Quantity CPS - CUSA Product Code
CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1. Immediate (Acute) Health Effects; NO

Delayed (Chronic) Health Effects; NO

Fire Hazard; NO 3.

4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO 5.

The following components of this material are found on the regulatory lists indicated by the number below the component name:

MOLYBDENUM DISULFIDE

is found on lists: 11,14,

DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC

is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

REGULATORY LISTS SEARCHED:

01=SARA 313 04=CA Prop. 65

02=MASS RTK 05=MI 406

NDA - No Data Available

03=NTP Carcinogen 06=IARC Group 1

Revision Number: 1 Revision Date: 01/21/92 MSDS Number: 005062

NA - Not Applicable

07=IARC Group 2A 08=IARC Group 2B 09=SARA 302/304 10=PA RTK 11=NJ RTK 12=CERCLA 302.4 13=MN RTK 14=ACGIH TLV 15=ACGIH STEL 16=ACGIH Calculated TLV 17=OSHA TWA 18=OSHA STEL 19=Chevron TLV 20=EPA Carcinogen 21=TSCA Sect 4(e) 22=TSCA Sect 5(a)(e)(f) 23=TSCA Sect 6 24=TSCA Sect 12(b) 25=TSCA Sect 8(a) 26=TSCA Sect 8(d) 28=Canadian WHMIS 29=OSHA CEILING

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibil-

Revision Number: 1 Revision Date: 01/21/92 MSDS Number: 005062

NDA - No Data Available NA - Not Applicable

ity for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 01/21/92 MSDS Number: 005062

NDA - No Data Available NA - Not Applicable

! iterial Safety Data	heet		LIMESTON		
Ash Grove Cement West, Inc.		Identity (Trade Hame	: At U sed Gn L	abel)	
Manufacturer 6720 SW Macadam Ave. #300		MSDS Humber		روزه در باند را دارد و در در انوستی ما ^{نو} باز این است.	
Modess Portland, OR 97219-2312		CAS Number		The same of the sa	
		Once Prepared	<i>34</i>	<u> </u>	
(503) 293-2333 Phone Number (For Information)		Prepared By*	W. Post		
(503) 293-2333		, ,	am not permito	ed. If any item	i is not applicable, or no
Emergency Phone Number	ilex*	information is	maitable, the x	pace must be	marked to indicate that
SECTION 1 - MATERIAL IDENTIF	CATION AND IN	FORMATION			
COMPONENTS — Chemical Name , (Hazardous Components 19e of greater; Car	Common Names enogens 0.1% or greater)	%.	DSHA PEL	ACGIH TLV	DTHER LIMITS RECORMENDED
Aslain asshanta Limestona	anco makuwalli				,
Calcium carbonate, Limestone, occurring silicates of Magnesi					
Potassium and Sodium	am, ILOH, Alduli	icut,			سادر و و و و و و و و و و و و و و و و و و و
r outhorized and boardan			\ <u></u>		
	:				

					The second secon
					and the second of the second o
Non-Hazardous Ingredients					
KOIAL		100	<u> </u>		,
SECTION 2 - PHYSICAL / CHEM	CAL CHARACTER	ISTICS		,	
Boiling Point N.A.		Specific Cravity (H,O = 1)	2.7		
Vapor Pressure (rmm big and Temperature) N.A.		Melting Point	N.A.		
Vapor Density Air = D N.A.		Vaporation Rate	- t) N.A.		
Solubility slight-about	0.01%	Valer leactive	No		
Appearance 6 inch to 48	inch minus roc	k			•
SECTION 3 - FIRE AND EXPLOSE	N HAZARD DATA				
Flack Point and N.A. Auto-India Method Used N.A. Tempelad	on Flat	nmebility Limits in % by Volume	N.A.	HEL N.	N. UEL N.A.
Extinguisher N.A.	نست براج در استان با دراج در در با المجازية في در بر بر بر بر				
Special Fire nung Procedures N.A.				-	and the second s
·					
Above the Second					
Unusual Fire and Explosion Hazaros None					and the second s



IMPORTANT - CONTAINS MATERIAL SAFETY DATA SHEETS (MSDS). PLEASE ROUTE TO PROPER PERSON OR DEPARTMENT.

We have enclosed Material Safety Data Sheets for products your company purchased from Kar Products. Our order number, invoice number and your purchase order number are shown below.

We are committed to helping you comply with the OSHA Hazard Communications Standard which requires that all personnel who may be exposed to hazardous materials must be provided by their employer with accurate information regarding the potential hazards of the materials they are using and trained in proper work practices to minimize any risk to your employees.

It is of critical importance that these MSDS sheets are forwarded to the person in your company responsible for implementing these regulations.

This packet was prepared by a computerized system which automatically prints and mails an MSDS when a product is first ordered by a customer or when there has been a change to the MSDS. Kar Products is committed to providing the service you need, and we ask that you contact your sales representative if you have questions or problems in this regard. If this is not convenient, please call Bobbie Cunnally at 1-708-296-6111 extension 6079.

ASH GROVE CEMENT WEST 13939 N RIVERGATE BLVD

PORTLAND, OR 97203

ORDER: 320652	INVOICE: 002452	CUST NO: 30255000
PROD. CODE	KAR PART #	DESCRIPTION:
75687 79970	78831-00 83488-02	ABRASIVE FLAP WHEEL ROLOC SURF.COND.DISC

MSDS Printed: 03/30/95

(708)296-6111

PRODUCT CODE: 75687-75688 PRODUCT NAME: A/O FLAP WHEEL 78827-78834 This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): A/O FLAP WHEEL 78827-78834 - PRODUCT IDENTIFICATION **TELEPHONE NUMBERS:** MANUFACTURERS NAME AND ADDRESS: Date Entered: 02/05/92 (800)752-7869 Rush Poison Control KAR PRODUCTS Last Revision: 03/01/93 461 N. Third Avenue Emergency:)

SYNONYMS: CHEMICAL FAMILY: HAZARD LABEL: MOLECULAR FORMULA:

Des Plaines, IL. 60016

MOLECULAR WEIGHT: NE or NA

HAZARDOUS INGREDIENTS/IDENTITY INFORMATION SECTION II

Information:

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME) CAS # OSHA PEL ACGIH TLV OTHER LIMITS PERCENTAGE NA 1.0 - 99.0 ABRASIVE MATERIAL SEE SEC.IX

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: NE or NA SPECIFIC GRAVITY (WATER = 1): MELTING POINT: NE or NA VAPOR PRESSURE (MM HG): . . . NA VAPOR DENSITY (AIR=1):. . . . NΔ EVAPORATION RATE: PHYSICAL STATES: Ľ] Gas NA

] Liquid (Butvl Acetate=1)

SOLUBILITY IN WATER: [X] Solid Not Known

PERCENT VOLATILE: NF or NA

APPEARANCE AND ODOR: Solid

- FIRE AND EXPLOSION HAZARD DATA SECTION IV

METHOD USED: Not known EXPLOSIVE LIMITS: LEL: UFL: FLASH PT: NE or NA EXTINGUISHING MEDIA:

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None.

REACTIVITY DATA SECTION V

STABILITY: Unstable [Stable [X]

CONDITIONS TO AVOID - INSTABILITY: INCOMPATIBILITY - MATERIALS TO AVOID: AZARDOUS DECOMPOSITION OR BYPRODUCTS:

HAZARDOUS POLYMERIZATION: May occur E Will not occur [X]

CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION:

SECTION VI - HEALTH HAZARD DATA

Eyes? Other: ROUTE(S) OF ENTRY: Inhalation? Skin? Ingestion?

HEALTH HAZARDS (Acute and Chronic):

During the dust - fluoride (AS F) - 2.5mg/m3; inert or nuisance dust: respirable fraction 5mg/m3, total dust - 15mg/m3. (Federal

OSHA permissable exposure limit).

CARCINOGENITY: NTP? OSHA Regulated? Not known. IARC Monographs? LD 50/LC 50: RECOMMENDED EXPOSURE LIMITS:

SIGNS AND SYMPTOMS OF EXPOSURE:

 $(m,q_{n-1})' \geq 2$ g. 830 c DIMMAN STATE

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

EMERGENCY AND FIRST AID PROCEDURES: Inhalation: Provide fresh air. Ey Eyes; Flush with plenty of water. Mechanical irritations only. Skin: May cause abrasions obtain MD assistance if needed.

-- Lic. to Kar Products

PRODUCT CODE: 75687-75688

PRODUCT NAME: A/O FLAP WHEEL 78827-78834

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

No special procedures.

WASTE DISPOSAL METHOD:

No special procedures.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Normal precautions should be taken for nuisance dust and particulates generated during grinding which will principally be from the workpiece rather than the product.

OTHER PRECAUTIONS:

Utilize approved respiratory protection from nuisance dust.

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE):

VENTILATION:

LOCAL EXHAUST: Local exh. to keep airborne concentr. below limits

MECHANICAL (GENERAL):

OTHER:

EYE PROTECTION: Face shield or safety glasses.

PROTECTIVE GLOVES: Prot. gloves recom. when grinding.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Safety glasses & prot. clothing must be worn when operating power.

WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - ADDITIONAL COMMENTS

Section II

HUB is an article and does not release or result in exposure to a hazardous chemical under normal conditions of use.

Abrasive Material: fastcut Resin Cloth A(180 & C) x 875 F

Cryolite (NA1ALF6)

15 mgm3



IMPORTANT - CONTAINS MATERIAL SAFETY DATA SHEETS (MSDS). PLEASE ROUTE TO PROPER PERSON OR DEPARTMENT.

We have enclosed Material Safety Data Sheets for products your company purchased from Kar Products. Our order number, invoice number and your purchase order number are shown below.

We are committed to helping you comply with the OSHA Hazard Communications Standard which requires that all personnel who may be exposed to hazardous materials must be provided by their employer with accurate information regarding the potential hazards of the materials they are using and trained in proper work practices to minimize any risk to your employees.

It is of critical importance that these MSDS sheets are forwarded to the person in your company responsible for implementing these regulations.

This packet was prepared by a computerized system which automatically prints and mails an MSDS when a product is first ordered by a customer or when there has been a change to the MSDS. Kar Products is committed to providing the service you need, and we ask that you contact your sales representative if you have questions or problems in this regard. It this is not convenient, please call Bobbie Cunnally at 1-708-296-6111 extension 6079

ASH GROVE CEMENT WEST 13939 N RIVERGATE BLVD

PORTLAND, OR 97203

ORDER: INVOICE: CUST NO: 321002 030769 30255000

PROD. CODE KAR PART # DESCRIPTION:

75687 78828-00 ABRASIVE FLAP WHEEL 75687 78830-00 ABRASIVE FLAP WHEEL

PRODUCT NAME: A/O FLAP WHEEL 78827-78834 PRODUCT CODE: 75687-75688 This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List)! A/O FLAP WHEEL 78827-78834

SECTION I - PRODUCT IDENTIFICATION

MANUFACTURERS NAME AND ADDRESS:

KAR PRODUCTS 461 N. Third Avenue Des Plaines, IL. 60016 TELEPHONE NUMBERS:

Rush Poison Control (800)752-7869 Emergency:

(708) 296-6111 Information:

Date Entered: 02/05/92 Lest Revision: 03/01/93 MSDS Printed: 04/18/95

UEL:

SYNONYMS; CHEMICAL FAMILY:

HAZARD LABEL: MOLECULAR FORMULA:

MOLECULAR WEIGHT: NE or NA

HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

PERCENTAGE HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME) CAS # OSHA PEL ACGIH TLV OTHER LIMITS 1.0 👫 99.0 ABRASIVE MATERIAL SEE SEC. IX

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: NE or NA MELTING POINT: NE or NA SPECIFIC GRAVITY (WATER = 1): VAPOR PRESSURE (MM HG): . . . NΔ

PHYSICAL STATES: [1 Gas VAPOR DENSITY (AIR=1):. . . . EVAPORATION RATE: NÁ

] Liquid

(Butyl Acetate=1)

[X] Solid

SOLUBILITY IN WATER: Not Known

PERCENT VOLATILE:

APPEARANCE AND ODOR:

Solid 🦪

- FIRE AND EXPLOSION HAZARD DATA SECTION IV

FLASH PT: NE or NA METHOD USED: Not known

EXTINGUISHING MEDIA:

Water, carbon dioxide; foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

SECTION V REACTIVITY DATA

Unstable [Stable [X]

CONDITIONS TO AVOID - INSTABILITY:

INCOMPATIBILITY - MATERIALS TO AVOID:

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:
HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X]

CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION:

- HEALTH HAZARD DATA SECTION VI

ROUTE(S) OF ENTRY: Inhalation? Skin? Eyes? Ingestion? Other:

HEALTH HAZARDS (Acute and Chronic):

During the dust - fluoride (AS F) - 2.5mg/m3; inert or nuisance dust: respirable fraction 5mg/m3, total dust - 15mg/m3;

OSHA permissable exposure limit). CARCINOGENITY: NTP? IARC Monographs?

RECOMMENDED EXPOSURE LIMITS:

OSHA Regulated?

Not known. LD 50/LC 50:

EXPLOSIVE LIMITS:

LEL:

SIGNS AND SYMPTOMS OF EXPOSURE:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

None known.

EMERGENCY AND FIRST AID PROCEDURES:

Eyes: Flush with plenty of water. Mechanical irritations only. Skin: May cause abras Inhalation: Provide fresh air. obtain MD assistance if needed.

Licato Kar Products

PRODUCT CODE: 75687-75688

PRODUCT NAME: A/O FLAP WHEEL 78827-78834

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

No special procedures.

WASTE DISPOSAL METHOD:

No special procedures.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Normal precautions should be taken for nuisance dust and particulates generated during grinding which will principally be from the workpiece rather than the product.

OTHER PRECAUTIONS:

Utilize approved respiratory protection from nuisance dust.

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE):

VENTILATION:

LOCAL EXHAUST: Local exh. to keep airborne concentr. below limits SPECIAL:

MECHANICAL (GENERAL):

OTHER:

EYE PROTECTION: Face shield or safety glasses.

PROTECTIVE GLOVES: Prot. gloves recom. When grinding. OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Safety glasses & prot. clothing must be worn when operating power.

WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - ADDITIONAL COMMENTS

Section II

HUB is an article and does not release or result in exposure to a hazardous chemical under normal conditions of use.

Abrasive Material: Fastcut Resin Cloth A(180 & C) x 875 F Cryolite (NA1ALF6) 15 mgm3

PRODUCT CODE: 80791-80802

PRODUCT NAME: KAR ZIRCONIA ALUMINA DISCS

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List); KAR ZIRCONIA ALUMINA DISCS

- Product Identification SECTION I

MANUFACTURERS NAME AND ADDRESS:

KAR PRODUCTS 461 N. Third Avenue Des Plaines, IL. 60016 TELEPHONE NUMBERS:

Information:

Rush Poison Control (800)752-7869 Emergency: ١.

(708)296-6111

Date Entered: 02/15/92 Last Revision: 02/02/93 MSDS Printed: 10/28/93

SYNONYMS:

CHEMICAL FAMILY: HAZARD LABEL: MOLECULAR FORMULA:

MOLECULAR WEIGHT: NE or NA

- Hazardous Ingredients/Identity Information SECTION II

ACGIH TLV OTHER LIMITS PERCENTAGE HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME) OSHA PE 1349-28-1 0.1 - 99.0 15mg/m3 10mg/m3 Aluminum Oxide 0.1 - 99.0 Sodium Aluminum Fluoride 15096-52-3 ND 2-5mg/m3

- Physical/Chemical Characteristics SECTION III

BOILING POINT: NE or NA MELTING POINT: NE or NA SPECIFIC GRAVITY (Water = 1): NA VAPOR PRESSURE (mm Hg): . . . NA VAPOR DENSITY (Air=1):. . . NA EVAPORATION RATE: NA

PHYSICAL STATES: [) Gas 1 Liquid

(Butyl Acetate=1) SOLUBILITY IN WATER: NA

[X] Solid PERCENT VOLATILE:

APPEARANCE AND ODOR:

Fibre coated with abrasive material.

- Fire and Explosion Hazard Data SECTION IV

FLASH PT: NE OF NA

METHOD USED: NA

EXPLOSIVE LIMITS:

LEL: NA

UEL: NA

EXTINGUISHING MEDIA:

NA

SPECIAL FIRE FIGHTING PROCEDURES:

Fibre and resin adhesive will burn and decompose; use respiratory protection.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

ŇĀ

SECTION V - Reactivity Data

STABILITY:

Unstable []

Stable [X]

CONDITIONS TO AVOID (Instability):

NA

INCOMPATIBILITY (MATERIALS TO AVOID):

MA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

During use, dust and decomposing resin fumes are generated. NOTE: The material being ground will, generally, create substantially greater amounts of airborne particles.

HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X]

CONDITIONS TO AVOID (Hazardous Polymerization):

NA

SECTION VI - Health Hazard Data

ROUTE(S) OF ENTRY: Inhalation? Y

Skin? Y

Eyes?

Ingestion? Y

Other:

HEALTH HAZARDS (Acute and Chronic):

Inhalation during use could cause coughing and shortness of breath due to dust and may affect breathing.

IARC Monographs? NTP? OSHA Regulated? This product is not carcinogenic. It is regulated. CARCINOGENITY: LD 50/LC 50: RECOMMENDED EXPOSURE LIMITS:

SIGNS AND SYMPTOMS OF EXPOSURE:

Coughing and shortness of breath (due to dust); ingestion very unlikely; not absorbed through skin but may cause abrasions; dust may irritate eyes; on some grinding elevated sound levels,

may be created which could affect hearing.

PRODUCT CODE: 80791-80802

PRODUCT NAME: KAR ZIRCONIA ALUMINA DISCS

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

None known.

EMERGENCY AND FIRST AID PROCEDURES:

Remove person to fresh air; and if needed, apply artificial respiration. Call physician. No known adverse effects from ingestion; however, obtain medical MD attn. Obtain MD attn. if hearing affected.

- Precautions for Safe Handling & Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Normal clean-up.

WASTE DISPOSAL METHOD:

Standard landfill consistent with Local, State and Federal regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

HAZARD LABEL INFORMATION:

Adequate ventilation (OSHA 29 CFR 1910.94-Ventilation) and (OSHA 29 CFR 1910.1000- Air Contaminates.) During storage

occasionally, a formaldehyde or phenolic resin odor may be released. OTHER PRECAUTIONS:

NA

SECTION VIII - Control Measures

PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): As required-dust respirator (OSHA 24 CFR 1910.134)

VENTILATION:

LOCAL EXHAUST:

MECHANICAL (GENERAL):

SPECIAL:

OTHER:

1 34 EYE PROTECTION: Face and eye protection

35

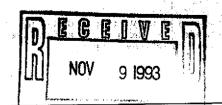
PROTECTIVE GLOVES: Recommended
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Hearing protection- OSHA CR 1910.215.

WORK/HYGIENIC/MAINTENANCE PRACTICES:

Follow directions and use protective measures.

SECTION IX Additional Comments

SECTION VIII: VENTILATION: Local Exhaust: Required during use - adequate ventilation (OSHA FR 1910:243 portable sanding machines)



PRODUCT NAME: SURFACE CONDITIONING DISCS (77960-77962) PRODUCT CODE: 79970 - 79972 This form may be used to comply with OSHA's Mazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): SURFACE CONDITIONING DISCS (77960-77962) - Product Identification SECTION I

MANUFACTURERS NAME AND ADDRESS: KAR PRODUCTS 461 N. Third Avenue Des Plaines, IL. 60016

TELEPHONE NUMBERS: Rush Poison Control (800)752-7869 Emergency: ١. (708)296-6111 Information:

Date Entered: 02/15/92 Last Revision: 02/24/93 MSDS Printed: 10/28/93

6-10-5

SYNONYMS: CHEMICAL FAMILY: HAZARD LABEL: MOLECULAR FORMULA:

MOLECULAR WEIGHT: NE or NA

- Hazardous Ingredients/Identity Information SECTION II

HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME) CAS # **OSHA PEL** OTHER LIMITS ACGIH TLV PERCENTAGE NYLON FIBERS 5.0 35.0 Nylon Fibers - 33.0 PHENOL-FORMALDEHYDE 9003-35-4 0.0 NA 9011-14-7 - 33.0 POLY (METHYL METHACRYLATE) NA 0.0 Epoxy Resin EPOXY RESIN NA 0.0 - 33.0 ABRASIVE PAR - 65.0 Abrasive particles 10mg/m3(TWA)10.0

- Physical/Chemical Characteristics SECTION III

NE or NA BOILING POINT: MELTING POINT:

SPECIFIC GRAVITY (Water = 1): VAPOR PRESSURE (mm Hg): . . . MA VAPOR DENSITY (Air=1):. . . . NA EVAPORATION RATE: NA (Butyl Acetate=1)

PHYSICAL STATES: [] Liquid [X] Solid

1 Gas

SOLUBILITY IN WATER: Insoluble PERCENT VOLATILE: 0.0 % by weight.

APPEARANCE AND ODOR:

Non-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resinous binders.

Viscosity: NA

SECTION IV - Fire and Explosion Hazard Data

FLASH PT: NE or NA EXTINGUISHING MEDIA: METHOD USED: NA

EXPLOSIVE LIMITS:

LEL: NA

UEL: NA

pH:

Water, carbon dioxide, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES:

NΔ

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NA

SECTION V Reactivity Data

STABILITY:

Unstable []

Stable [X]

COMDITIONS TO AVOID (Instability): NA

INCOMPATIBILITY (MATERIALS TO AVOID):

NA

HAZARDOUS DECOMPOSITION OR BYPRODUCTS:

When subjected to flaming conditions, carbon dioxide, carbon monixide, oxides of nitrogen and cyanides.

HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X]

CONDITIONS TO AVOID (Hazardous Polymerization):

- Health Hazard Data SECTION VI

ROUTE(\$) OF ENTRY: Inhalation? Y HEALTH MAZARDS (Acute and Chronic): Skin? Y

Ingestion? N

Other:

Eye contact - Mechanical only; Skin contact - Mechanical only;

Inhalation - Dust may be irritating to the respiratory system. Abrasive particles Exposure Limit, OSHA-respirable fraction 10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not applicable.

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS (77960-77962)

CARCINOGENITY: NTP? TARC Monographs?

OSHA Regulated?

RECOMMENDED EXPOSURE LIMITS:

LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plently of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide fresh air. Ingestion: Not applicable,

SECTION VII - Precautions for Safe Handling & Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

HAZARD LABEL INFORMATION:

OTHER PRECAUTIONS:

NA

SECTION VIII - Control Measures

PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.

VENTILATION:

LOCAL EXHAUST: See "Respiratory Protection".

MECHANICAL (GENERAL):

PROTECTIVE GLOVES:

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

WORK/HYGIENIC/MAINTENANCE PRACTICES:

SPECIAL:

OTHER: EYE PROTECTION: See Section IX.

SECTION IX - Additional Comments

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

Appendix33-001027



IMPORTANT - CONTAINS MATERIAL SAFETY DATA SHEETS (MSDS). PLEASE ROUTE TO PROPER PERSON OR DEPARTMENT.

We have enclosed Material Safety Data Sheets for products your company purchased from Kar Products. Our order number, invoice number and your purchase order number are shown below.

We are committed to helping you comply with the OSHA Hazard Communications Standard which requires that all personnel who may be exposed to hazardous materials must be provided by their employer with accurate information regarding the potential hazards of the materials they are using and trained in proper work practices to minimize any risk to your employees.

It is of critical importance that these MSDS sheets are forwarded to the person in your company responsible for implementing these regulations.

This packet was prepared by a computerized system which automatically prints and mails an MSDS when a product is first ordered by a customer or when there has been a change to the MSDS. Kar Products is committed to providing the service you need, and we ask that you contact your sales representative if you have questions or problems in this regard. If this is not convenient, please call Bobbie Cunnally at 1-708-296-6111 extension 6079.

ASH GROVE CEMENT WEST 13939 N RIVERGATE BLVD

PORTLAND, OR 97203

ORDER: 320158

INVOICE: 976142

CUST NO: 30255000

PROD. CODE

KAR PART #

DESCRIPTION:

79970

79971-00

SURFACE COND.DISC

PRODUCT CODE: 79970 - 79972 PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)
This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

SECTION I - PRODUCT IDENTIFICATION	
	Date Entered: 02/15/92 Last Revision: 03/24/94 MSDS Printed: 03/15/95
SYNONYMS: CHEMICAL FAMILY: HAZARD LABEL: HOLECULAR FORMULA: HOLECULAR WEIGHT: NE or NA	
SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION	
NA NA PHENOL-FORMALDEHYDE 9003-35-4 NA POLY (METHYL METHACRYLATE) 9011-14-7 NA Epoxy Resin NA NA Abrasive particles NA 10mg/m3(TWA)	DTHER LIMITS PERCENTAGE 5.0 - 35.0 0.0 - 33.0 0.0 - 33.0 0.0 - 33.0 10.0 - 65.0
SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS	
BOILING POINT: NE OF NA SPECIFIC GRAVITY (WATER = 1): ND MELTING POINT: VAPOR PRESSURE (MM HG): NA VAPOR DENSITY (AIR=1): NA PHYSICAL STATES: [] Gas EVAPORATION RATE: NA [] Liquid (Butyl Acetate=1) [X] Solid SOLUBILITY IN WATER: Insoluble	
H: NA PERCENT VOLATILE: 0.0 % by weight. PPEARANCE AND ODOR: On-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resistority: NA SECTION IV — FIRE AND EXPLOSION HAZARD DATA	sinous binders.
LASH PT: NE OR NA METHOD USED: NA EXPLOSIVE LIMITS: LEL: NA XTINGUISHING MEDIA: ater, carbon dioxide, foam, dry chemical. PECIAL FIRE FIGHTING PROCEDURES: A NUSUAL FIRE AND EXPLOSION HAZARDS: A	A UEL: NA
SECTION V - REACTIVITY DATA	
STABILITY: Unstable [] Stable [X] CONDITIONS TO AVOID - INSTABILITY: IA INCOMPATIBILITY - MATERIALS TO AVOID: IA	
AZARDOUS DECOMPOSITION OR BYPRODUCTS: hen subjected to flaming conditions, carbon dioxide, carbon monixide, oxides of nitrogen and cyanides. AZARDOUS POLYMERIZATION: May occur [] Will not occur [X] ONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION: IA	
SECTION VI - HEALTH HAZARD DATA	e de la composition della comp
ROUTE(S) OF ENTRY: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? No Other: HEALTH HAZARDS (Acute and Chronic): Eye contact - Mechanical only; Skin contact - Mechanical only; Inhalation - Dust may be irritating to the respiratory system. Abrasive particles Exposure Limit, OSH/	A-respirable fraction

— Lic. to Kar Products —

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP?

IARC Monographs?

OSHA Regulated? LD 50/LC 50:

RECOMMENDED EXPOSURE LIMITS:

SIGNS AND SYMPTOMS OF EXPOSURE:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plently of water, call doctor if irritation persists. Skin: Wash with scap and water. Inhalation: Provide

fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NA

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

OTHER PRECAUTIONS:

NA

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.

VENTILATION:

LOCAL EXHAUST: See "Respiratory Protection".

SPECIAL: OTHER:

EYE PROTECTION: See Section IX.

MECHANICAL (GENERAL):

PROTECTIVE GLOVES:

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

WORK/HYGIENIC/MAINTENANCE PRACTICES:

- ADDITIONAL COMMENTS SECTION IX

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard 287.1.

PRODUCT CODE: 79970 - 79972 PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)
This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): SURFACE CONDITIONING DISCS (77960-77962) (83488-83493

SECTION I — PRODUC	CT IDENTIFICATIO	ON :		
ANUFACTURERS NAME AND ADDRESS: AR PRODUCTS 61 N. Third Avenue es Plaines, IL. 60016	TELEPHONE NU Rush Poison Emergency: Information:	Control (800)752-7869 () -	Date Entered Last Revisio MSDS Printed	
YNONYMS: HEMICAL FAMILY: AZARD LABEL: OLECULAR FORMULA: OLECULAR WEIGHT: NE OF NA				-1
ECTION II - HAZARD	OUS INGREDIENTS	S/IDENTITY INFORMA	TION	· j.,
AZARDOUS COMPONENTS (SPECIFIC CHEM		NA NA 9003-35-4 NA 9011-14-7 NA NA NA NA NA 10mg/m3(TWA)	IH TLV OTHER LIMITS	PERCENTAGE 5.0 - 35.0 0.0 - 33.0 0.0 - 33.0 0.0 - 33.0 10.0 - 65.0
ECTION III - PHYSIC	AL/CHEMICAL CH	ARACTERISTICS		
OILING POINT: NE OF NA ELTING POINT: HYSICAL STATES: [] Gas	SPECIFIC GRAVITY (WATER VAPOR PRESSURE (MM HG): VAPOR DENSITY (AIR=1):. EVAPORATION RATE: (Butyl Acetate=1) SOLUBILITY IN WATER:	NA NA NA		
<u>4:</u> NA PPEARANCE AND ODOR: On-woven fibrous articles impregnatiscosity: NA ECTION IV - FIRE A	PERCENT VOLATILE:	s which are bonded together wit	h cured resinous binder	s .
LASH PT: NE OF NA METHOD US KTINGUISHING MEDIA: ater, carbon dioxide, foam, dry ch PECIAL FIRE FIGHTING PROCEDURES: AUSUAL FIRE AND EXPLOSION HAZARDS:	nemical.	EXPLOSIVE LIMITS:	LEL: NA UE	L: NA
ECTION V - REACTI	VITY DATA			
TREILITY: Unstable [] ONDITIONS TO AVOID - INSTABILITY: A NCOMPATIBILITY - MATERIALS TO AVOI				
A: AZARDOUS DECOMPOSITION OR BYPRODUC Than: subjected to flaming condition	ns, carbon dioxide, carbon m cur [] Will not occum		d cyanfdes.	
A SZARDOUS DECOMPOSITION OR BYPRODUC hen: subjected to flaming condition AZARDOUS POLYMERIZATION: May occ ONDITIONS TO AVOID - HAZARDOUS POL A	ns, carbon dioxide, carbon m cur [] Will not occum		d cyanides.	· · · · · · · · · · · · · · · · · · ·
A AZARDOUS DECOMPOSITION OR BYPRODUC hen: subjected to flaming condition AZARDOUS POLYMERIZATION: May occ ONDITIONS TO AVOID - HAZARDOUS POL A	s, carbon dioxide, carbon of cur [] Will not occur MERIZATION: HAZARD DATA Skin? Yes Eyes? Yes contact - Mechanical only, to the respiratory system.	Ingestion? No Other:		fraction

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP?

IARC Monographs?

OSHA Regulated?

RECOMMENDED EXPOSURE LIMITS:

LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plently of water, call doctor if irritation persists. Skin: Wash with scap and water. Inhalation: Provide fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NA

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

OTHER PRECAUTIONS:

NA

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.

VENTILATION:

LOCAL EXHAUST: See "Respiratory Protection".

MECHANICAL (GENERAL):

PROTECTIVE GLOVES:

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

WORK/HYGIENIC/MAINTENANCE PRACTICES:

SPECIAL:

OTHER:

EYE PROTECTION: See Section IX.

SECTION IX - ADDITIONAL COMMENTS

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear. approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

- Lic. to Kar Products -

... 1. 1

Material Safety Data Sheet





NO. 457H

Common Name	Phone	Date
Dolomite	~ ,	53-4001 Rev 92-03-02 24-9300 Orig 86-07-23 53-4649

Prepared by the Hazardous Materials Control Committee.

SECTION I. Material Description

Chemical Name & Formula: Dolomite, CaCO, MgCO, Silicon dioxide, SiO,

Other Designation: D-313, B-BC2, D-BC10, D-BC10W

CAS No.: Dolomite (16389-88-1); Silicon Dioxide (7631-86-9) Manufacturer: Northwest Alloys, P.O. Box 115, Addy, WA 99101

Product Use: Chemical processing

SECTION II. Hazardous Ingredients and Occupational Exposure Limits

 TWA in mg/m³

 Z Typical
 ACGIH TLV
 OSHA PEL

 CaCo₃•MgCO₃. . . . 97-100
 Amorphous silica 10
 6

 SiO₂ (amorphous) . . 0-3
 Nuisance dust 10
 15, 5 (resp.)

 H₂O. Remainder
 ALCOA PEL - total dust: 10 mg/m³

LD₅₀ found for oral route of administration: SiO₂ (amorphous) 3160 mg/kg, rat

SECTION III. Physical Data

Physical Form: Solid

Boiling Temperature: Not applicable Freeze-Melt Temperature: Not determined Vapor Pressure (mm): Not applicable Vapor Density (air = 1): Not applicable

Evaporation Rate: Not applicable Specific Gravity: Not determined

Density: 2.87 g/cc Water Solubility: Slight

pH: 9.60 [50% weight (gm) to water volume (ml)]

Color: Grayish-white

Odor: None

Odor Threshold: Not applicable

Coefficient of water/oil distribution: Not determined

SECTION IV. Fire and Explosion Data

Flashpoint: Auto-Ignition Temp.: Flammability Limits in Air: Upper: Lower:
None Not applicable Not applicable

Product is non-combustible. Not an explosion hazard. Use fire extinguishing agent suitable for the surrounding fire. Wear NIOSH approved, self-contained breathing apparatus and protective clothing when appropriate.

SECTION V. Reactivity Data

Material is stable under normal conditions of use, storage and transportation.

SECTION VI. Health Hazard Information (See Section II for exposure limits.)
This product has not undergone testing for either acute or chronic toxic
effects. However, based on its chemical composition, we would expect it to be
a low health risk by inhalation so long as the occupational exposure limits
specified under Section II are met.

72-62-7825-11

MATERIAL SAFETY DATA SHEET



Subsidiary of Ashland Oil, Inc. P.O. BOX 14000 LEXINGTON, KENTUCKY 40512 (606) 264-7000

Emergency Telephone 1 (800) 274-5263 or 1-800-ASHLAND

^02991

INJECT CARE PL

Page: 2

	:SECTION /III-PHYSICAL EDATA (Continued)	ž.
rercent Volatiles		85-100%
Evaporation Rate		SLOWER THAN ETHER
Appearance		CLEAR AMBER
State		FIGUIO

SECTION :IV-FIRE *AND EXPLOSION INFORMATION

FLASH POINT(TCC)

110.0 - 120.0 Deg F

43.3 - 48.9 Deg C)

EXPLOSIVE LIMIT

(LOWEST VALUE OF COMPONENT) LOWER - .7%

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

FIREFIGHTING PROCEDURES: MEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WHEN FIGHTING FIRES.

SPECIAL FIRE & EXPLOSION HAZARDS: VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND OR BE MOVED BY VENTILATION AND IGNITED BY HEAT, PILOT LIGHTS, OTHER FLAMES AND IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING POINT.

NEVER USE MELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

ALL FIVE GALLON PAILS AND LARGER METAL CONTAINERS INCLUDING TANK CARS AND TANK TRUCKS SHOULD BE GROUNDED AND/OR BONDED WHEN MATERIAL IS TRANSFERRED.

NEPA CODES:

HEALTH- 2

FLAMMABILITY- 2

REACTIVITY- 0

*SECTION V-HEALTH *HAZARD *DATA

PERMISSIBLE EXPOSURE LEVEL: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE:

EYES - MAY CAUSE SEVERE IRRITATION, REDNESS, TEARING, BLURRED VISION.
SKIN - PROLONGED OR REPEATED CONTACT MAY CAUSE MODERATE IRRITATION, DEFATTING, DERMATITIS.
BREATHING - EXCESSIVE INHALATION OF VAPORS MAY CAUSE MASAL AND RESPIRATORY IRRITATION, CENTRAL NERVOUS SYSTEM EFFECTS INCLUDING DIZZINES, MEAKNESS, FATIGUE, NAUSEA, HEADACHE AND POSSIBLE UNCONSCIOUSNESS AND EVEN ASPHYXIATION.
"MALLOHING - MAY CAUSE GASTROINTESTINAL IRRITATION NAUSEA, VOMITING, AND DIARRHEA. ASPIRATION OF MATERIAL INTO THE LUNGS MAY CAUSE CHEMICAL PNEUMONIA WHICH MAY BE FATAL.

RST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.

REMOVE CONTAMINATED SHOES PROMPTLY. DISCARD SHOES SATURATED WITH THIS PRODUCT.

- IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.
- IF SMALLOMED: DO NOT INDUCE VOMITING, KEEP PERSON WARM, GUIET, AND GET MEDICAL ATTENTION. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.
- IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

PRIMARY ROUTE(S) OF ENTRY:

INHALATION, SKIN CONTACT

EFFECTS OF CHRONIC OVEREXPOSURE:

THIS PRODUCT CONTAINS KEROSENE. MATERIALS SIMILAR TO KEROSENE HAVE BEEN SHOWN TO PRODUCE SKIN CANCER IN LABORATORY ANIMALS FOLLOWING REPEATED SKIN EXPOSURE MITHOUT MASHING OR REMOVAL.

SECTION WI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT MITH:, STRONG OXIDIZING AGENTS

SECTION *VII-SPILL *OR *LEAK *PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON VERMICULITE, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND TRANSFER TO HOOD.

LARGE SPILL: ELIMINATE ALL IGNITION SOURCES (FLARES, FLAMES INCLUDING PILOT LIGHTS, ELECTRICAL SPARKS). PERSONS
NOT MEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED.
STOP SPILL AT SOURCE. PREVENT FROM ENTERING DRAINS, SEWERS, STREAMS OR OTHER BODIES OF WATER, PREVENT FROM
SPREADING. IF RUNOFF OCCURS, NOTIFY AUTHORITIES AS REQUIRED. PUMP OR VACUUM TRANSFER SPILLED PRODUCT TO
CLEAN CONTAINERS FOR RECOVERY. ABSORB UNRECOVERABLE PRODUCT.TRANSFER CONTAMINATED ABSORBENT, SOIL AND
OTHER MATERIALS TOCONTAINERS FOR DISPOSAL.

PREVENT RUN-OFF TO SEMERS, STREAMS OR OTHER BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURED.

COPYRIGHT 1992

CONTINUED ON PAGE: 3



Subsidiary of Ashland Oil, Inc. P.O. BOX 14000 LEXINGTON, KENTUCKY 40512 (606) 264-7000

Emergency Telephone 1 (800) 274-5263 or 1-800-ASHLAND

2991

INJECT CARE PL

Page: 3

«SECTION VII—SPILL OR LEAK PROCEDURES (Continued)

HASTE DISPOSAL METHOD:

SMALL SPILL: ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPORS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.

LARGE SPILL: DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS

SECTION *VILI-PROTECTIVE *EQUIPMENT TO *BE AUSED

RESPIRATORY PROTECTION: IF MORKPLACE EXPOSURE LIMIT(S) OF PRODUCT OR ANY COMPONENT IS EXCEEDED (SEE SECTION II), A NIOSH/MSHA APPROVED AIR SUPPLIED RESPIRATOR IS ADVISED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. OSHA REGULATIONS ALSO PERMIT OTHER NIOSH/MSHA RESPIRATORS (NEGATIVE PRESSURE TYPE) UNDER SPECIFIED CONDITIONS (SEE YOUR SAFETY EQUIPMENT SUPPLIER). ENGINEERING OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS:, NEOPRENE, NITRILE RUBBER

EYE PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR IMPERVIOUS CLOTHING AND BOOTS.

SECTION IX-SPECIAL PRECAUTIONS FOR FOTHER ACOMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS MHEN EMPTIED.SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT MARRANTED TO BE MHETHER ORIGINATING WITH THE COMPANY OR NOT, RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

SECTION X-LABEL INFORMATION

CAUTION!

COMBUSTIBLE LIQUID AND VAPOR

MAY CAUSE EYE AND SKIN IRRITATION.

INHALATION OF VAPOR MAY CAUSE IRRITATION OF NASAL AND RESPIRATORY PASSAGES.

SMALLOWING MAY CAUSE IRRITATION OF MOUTH, ESOPHAGUS, AND GASTROINTESTINAL SYSTEM AND MAY BE FATAL.

HANDLING & STORAGE:

CONTAINER SHOULD BE GROUNDED AND BONDED WHEN TRANSFERRING LIQUID CONTENTS. KEEP AMAY FROM HEAT, SPARKS, AND OPEN FLAME. HEAR CHEMICAL SPLASH GOGGLES, IMPERVIOUS GLOVES AND OTHER NECESSARY PROTECTIVE EQUIPMENT. HASH THOROUGHLY AFTER HANDLING. MAINTAIN AMBIENT AIR CONCENTRATION(S) BELOW PERMISSIBLE EXPOSURE LIMITS. AVOID CONTACT WITH EYES AND PROLONGED OR REPEATED CONTACT WITH SKIN. DO NOT TRANSFER TO UNLABELED CONTAINER. KEEP CONTAINER CLOSED WHEN NOT IN USE. EMPTY CONTAINERS MAY CONTAIN HAZARDOUS PRODUCT RESIDUES. USE OR STORE ONLY WITH ADEQUATE VENTILATION. DO NOT USE CUTTING OR WELDING TORCH ON THIS CONTAINER (EVEN EMPTY). KEEP OUT OF THE REACH OF CHILDREN. FOR INDUSTRIAL USE ONLY, BEFORE USE, REVIEM MATERIAL SAFETY DATA SHEET FOR MORE DETAILED INFORMATION, INCLUDING CHRONIC HEALTH EFFECTS. 24-HOUR EMERGENCY NUMBER 1-800-274-5263

FIRST AID:

EYES: IMMEDIATELY FLUSH WITH MATER FOR AT LEAST 15 MINUTES WHILE LIFTING UPPER AND LOWER EYELIDS. DO NOT USE CHEMICAL ANTIDOTE. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN: WASH THOROUGHLY MITH SOAP AND WATER.

INHALATION: IF AFFECTED, REMOVE TO FRESH AIR. IF BREATHING IS DIFFICULT, GET MEDICAL ATTENTION.

INGESTION: DO NOT INDUCE VONITING. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. ASPIRATION HAZARD IF SMALLOHED. CAN ENTER LUNGS AND CAUSE DAMAGE.

CHRONIC_INFORMATION:

CONTAINS MATERIAL(S) MHICH MAY CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION. CONTAINS: KEROSENE (8008-20-6), PETROLEUM DISTILLATES, N.O.S. (64742-94-5), 1-BUTANOL (71-36-3) AND CONTENTS PARTIALLY UNKNOWN.

*** COMPONENTS APPEAR IN SECTION II ***

LAST PAGE--SEE ATTACHMENT PAGE ENCLOSED--LAST PAGE COPYRIGHT 1992



Subsidiary of Ashland Oil, Inc. P.O. BOX 14000 **LEXINGTON, KENTUCKY 40512** (606) 264-7000

Emergency Telephone 1 (800) 274-5263 or 1-800-ASHLAND

2991

INJECT CARE PL

Page: 1

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD)

Product Name: INJECT CARE PL

NAPA-PORTLAND PO BOX 3169

08 70 000 0862954-053

Data Sheet No: 0211967-003 Prepared: 03/24/92 Supersedes: 04/23/90

PORTLAND

ATTN: PLANT MGR / SAFETY DIR.

SECTION II-PRODUCT IDENTIFICATION

General or Generic ID: BLEND

DOT Hazard Classification: COMBUSTIBLE (173.115)

SECTION HIL-COMPONENTS

THE COMPOSITION OF THIS PRODUCT IS BEING WITHHELD AS A TRADE SECRET.

97208

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION.

SEE DEFINITION PAGE FOR CLARIFICATION

<u>INGREDIENT</u> FUEL ADDITIVE	<u>% (by MT)</u> 60-65	<u>PEL</u>	ILY	<u>Note</u> (1)
GASOLINE ADDITIVE	1-5			(2)
KEROSENE CAS #: 8008-20-6	10-25			(3)
AROMATIC PETROLEUM DISTILLATES CAS #: 64742-94-5	5-10	100 PPM		(4)
CAS #: 71-36-3	1-5	50 PPM - CEILING	50 PPM - CEILING	(5)

Notes:

(1) PEL/TLV NOT ESTABLISHED FOR THIS MATERIAL

MANUFACTURER RECOMMENDS AN EXPOSURE STANDARD OF BOPPH FOR A DAILY 8-HOUR EXPOSURE.

THIS PRODUCT CONTAINS 2.5% ETHYL BENZENE(CAS#100-41-1) AND 12.8% XYLENE(CAS#95-47-6) WHICH APPEAR ON THE SARA SECTION 313 LIST OF TOXIC CHEMICALS.

- (2) THIS PROPRIETARY GASOLINE ADDITIVE CONTAINS 7% MYLENE (CAS # 1330-20-7) WITH A PEL/TLV OF 100 PPM AND STEL OF 150 PPM AND 2% ETHYLBENZENE (CAS #100-41-4) WITH A PEL/TLV OF 100 PPM AND STEL OF 125 PPM. THESE CHEMICALS ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III.
- (3) NIOSH RECOMMENOS A LIMIT OF 100MG/M3 FOR 10 HR.

THIS PRODUCT CONTAINS THE FOLLOWING WHICH APPEAR ON THE SARA SECTION 313 LIST OF TOXIC CHEMICALS CHEMICAL CAS NUMBER WT. PERCENT XYLENE MIX 1330-20-7 0.5-1.5 NAPHTHALENE 91-20-3 0.5-1.5

TLY NOT ESTABLISHED FOR THIS MATERIAL.

(4) TLV NOT ESTABLISHED FOR THIS MATERIAL.

THIS MATERIAL MAY CONTAIN 10% NAPHTHALENE, CAST 91-20-3, WHICH HAS A PEL/TLY OF 10 PPM, STEL OF 15 PPM; AND 2% 1,2,4-TRIMETHYLBENZENE, CAST 95-63-6, WHICH HAS A PEL/TLY OF 25 PPM. NAPHTHALENE AND 1,2,4-TRIMETHYLBENZENE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III.

(5) SKIN ABSORPTION MAY CONTRIBUTE TO TO THE OVERALL ABSORPTION OF THIS MATERIAL. APPROPRIATE MEASURES SHOULD BE TAKEN TO PREVENT ABSORPTION SO THAT THE TLV IS NOT INVALIDATED.

THIS CHEMICAL IS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF SARA TITLE III.

	-iSE(CTION III-PHYS	SICAL DATA		1
Boiling Point	for COMPONENT(10-25%)		1	320.00 Deg F 160.00 Deg C) 760.00 mm Hg
Vapor Pressure	for COMPONENT	10-25%)		a ₍	5.00 mm Hg 77.00 Deg F 25.00 Deg C)
Specific Vapor Density				HE	AVIER THAN AIR
ecific Gravity				.870 - 2 (.830 60.00 Deg F 15.55 Deg C)

COPYRIGHT 1992

CONTINUED ON PAGE: 2



ZEP MANUFACTURING COMPANY P.O. BOX 2015 ATLANTA, GEORGIA 30301

ASHGROVE CEMENT WEST INC 13939 N RIVERGATE **BLVD** PORTLAND, OR 97203

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

12/15/92

ISSUE DATE: 05/12/92 SUPERSEDES: 05/01/92

ZEPARADE FINISH PRODUCT NO.: 2014

Floor Finish

SECTION 1 - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(404) 435-2973 (404) 351-2952 (404) 432-2873 NON-OFFICE HOURS, WEEKENDS AND HOLIDAYS, PLEASE CALL YOUR

LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(404) 922-0923

CHEMTREC:

1-800-424-9300 DISTRICT OF COLUMBIA:

TOLL-FREE - ALL CALLS RECORDED

(202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

EFFECTS (SEE REVERSE) (PPM) N/D CBL IRR

PROD. < 5

** 2-(2-ETHOXYETHOXY)-ETHANOL ** diethylene glycol monoethyl ether, ethoxydiglycol; CAS# 111-90-0; RTECS# KK8750000; OSHA PEL N/D ***DIPROPYLENE GLYCOL METHYL ETHER ** dipropylene glycol monomethyl ether; CAS# 34590-94-8; RTECS# JB1575000; OSHA PEL-100 PPM; OSHA/ACGIH STEL-150 PPM

100

CBL CNS

< 5

@ Identifies chemicals listed under SARA-Section 313 for release reporting

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced,

Acute Effects of Overexposure:

This product may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Overexposure by inhalation may cause central nervous system depression characterized by nausea and vomiting. Chronic Effects of Overexposure:

here are no known effects from chronic exposure to this product. None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.

st'd PEL/TLV: Not established

Primary Routes of Entry: N/A

HMIS Codes: HEALTH 1; FLAM. 0; REACT, 0; PERS. PROTECT. A ; CHRONIC HAZ, NO

FIRST AID PROCEDURES: Skin:

Immediately flush contaminated skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once. Eves:

Move exposed person to fresh air. If irritation persists, get medical attention promptly

Ingest: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing:

Ventilation:

The use of natural rubber, neoprene, or nitrile gloves is recommended if prolonged skin contact is expected.

Eye Protection: Respiratory Protection: Weaaring tight-fitting safety glasses is recommended, if splashing may occur.

No extra measures are needed if ventilation is adequate.

Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

Boiling Point (°F): 215 F Percent Volatile by Volume (%): 84%

Specific Gravity: 1.01 Vapor Density (air = 1): N/D

Vapor Pressure (mmHg): Evaporation Rate (WATER = 1): pH (use dilution of):

N/D 1.0 N/A

Solubility in Water: COMPLETE pH (concentrate): 8.0-8.5
Appearance and Odor: AN OPAQUE, MILKY-WHITE LIQUID WITH A MILD AMMONIA ODOR

SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (*F) (method used): NONE ()
Flammable Limits: NONE ()
LEL N/D UEL N/D

Extinguishing Media:

Noncombustible.

Special Fire Fighting: Unusual Fire Hazards:

Wear self-contained positive pres. Breathing apparatus. Fire exposed drums should be cooled with stream of water.

ZEP MANUFACTURING COMPANY

MATERIAL SAFETY DATA SHEET PAGE 2

Stability

Incompatibility (avoid): Polymerization:

Strong acids, alkalies, and oxidizers

Will not occur

Hazardous Decomposition:

Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

SECTION VII - REACTIVITY DATA

Steps to be Taken in Case Material is Released or Spilled:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on inert absorbent material (eg Zep-O-Zorb). Pick up and place residue in a suitable waste container or, if permitted, flush to sewer. Thoroughly rinse spill area with water. Waste Disposal Method:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg. Zep-O-Zerb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA Hazardous Waste Numbers: N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps, between 40-120 degrees F. Keep product out of eyes. Clothing or shoes which become contaminated with substance should be removed promptly and not reborn until thoroughly cleaned. Keep out of the reach of children.

SECTION X - TRANSPORTATION DATA

DOT Label/Placard: NONE

DOT Proper Shipping Name: NONE

DOT Hazard Class: N/A

DOT I.D. Number: N/A
EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container): : NONE

NOTICE

Thank you for your interest in, and use of. Zep products. Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equip-ment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers retain residue (liquid and/or vapor) and can be dangerous DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse

TERMS AND ABBREVIATIONS USED IN THE MSDS: BY SECTION ALPHABETICALLY:

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human

cancer causing agent.

CAS #: Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances

CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS. Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive • Causes irreversible alterations in living

tissue (e.g. burns).
DESIGNATIONS: Chemical and common names of hazardous

ingredients EIR: Eye Irritant Only . Causes reversible reddening and/or

Inflamination of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) air-

borne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling

ACGIH: American Conference of Governmental industrial

Hygienists.

CEILING: The concentration that should not be exceeded in the workplace during any part of the working exposure.

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit- A set of time weighted

average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM: Parts per million - unit of measure for exposure

(S) SKIN: Skin contact with substance can contribute to overall exposure.
STEL Short Term Exposure Limit- Maximum concentration

for a continuous 15-minute exposure period.

7LV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBL: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite it a source of ignition is

present as tested with a closed cup tester.

HAZARDOUS INGREDIENTS; Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX: Highly toxic - the probable lethal dose for 70 kg (150 HIX: Highly loxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

IRR: Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

NIA: Not Applicable - Category is not appropriate for this

product.

N/D: Not Determined - Insufficient Information for a deter-

mination for this Item.

RTECS #: Registry of Toxic Effects of Chemical Substances
an unreviewed listing of published toxicology data on

chemical substances.

SARA: Superfund Amendments and Reauthorization Act -Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated

Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time. CHRONIC EFFECT; Adverse effects that are most likely to

occul from repealed exposure over a long period of time. EST'D PELITLY: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for provid-

ing sale workplace conditions to nearly all workers.

HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemi-cal under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicted with a yes. Consult HMIS training guides for Personal Profection letter codes which indicate necessary protective equipment

PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through breathing of vapors.

SKIN: A primary route of exposure through contact with

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks. MSHA: Mine Safety and Health Administration NIOSH; National Institute for Occupational Salety and

SECTION V: PHYSICAL DATA

the skin.

EVAPORATION RATE; it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pH; A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline

pH = 14)
PERCENT VOLATILE: The percentage of the product (liquid
or solid) that will evaporate at 212°F and ambient pressure.
SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expr ed to be produced upon product decomposition or fire. INCOMPATIBILITY; Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's

molecules to combine in a chemical reaction releasing ex cess pressure and heat.

STABILITY: Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS; RCRA (Resource Conservation and Re-covery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original

SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.

TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear An ar inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaran-teed. We cannot anticipate all conditions under which this Information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.

(Notice Bevised 8/91)



ZEP MANUFACTURING COMPANY P.O. BOX 2015 ATLANTA, GEORGIA 30301

ASHGROVE CEMENT WEST INC 13939 N RIVERGATE BLVD PORTLAND, OR 97203

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

12/15/92

ISSUE DATE: 05/12/92 SUPERSEDES: 05/01/92

ZEPARADE SEALER

PRODUCT NO.: 2018

Floor Spains

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(404) 435-2973

NON-OFFICE HOURS, WEEKENDS AND HOLIDAYS, PLEASE CALL YOUR

(404) 351-2952 (404) 432-2873

LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(404) 922-0923

CHEMTREC:

1-800-424-9300 DISTRICT OF COLUMBIA:

TOLL-FREE - ALL CALLS RECORDED

(202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

@ ** DIETHYLENE GLYCOL MONOMETHYL ETHER ** 2-(2-methoxy)-ethanol; methyl carbitol; CAS# 111-77-3; RTECS#

(PPM) N/D

EFFECTS (SEE REVERSE)

PROD < 5

KL6125000 DIETHYLENE GLYCOL MONOBUTYL ETHER * 2-(2-butoxyethoxy)-ethanol; butyl carbitol; CAS# 112-34-5; RTECS# KJ9100000; OSHA PEL-N/D

N/D

EIR CBL EIR

< 5

@ identifies chemicals listed under SARA-Section 313 for release reporting

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

This product can be an eye irritant. Inflammation of eye tissue is characterized by redness, watering, and/or itching.

Chronic Effects of Overexposure:

There are no known effects from chronic exposure to this product. None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA. Primary Routes of Entry: Inh.

st'd PEL/TLV: Not established

HMIS Codes: HEALTH 1;FLAM, 0;REACT, 0;PERS, PROTECT, A ;CHRONIC HAZ, NO FIRST AID PROCEDURES:

Immediately flush contaminated skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once. Move exposed person to fresh air. If irritation persists, get medical attention promptly. Eves:

Inhale

Ingest: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing:

The use of natural rubber, neoprene, or nitrile gloves is recommended if prolonged skin contact is expected.

Weaaring tight-fitting safety glasses is recommended, if splashing may occur. No extra measures are needed if ventilation is adequate. Eye Protection:

Respiratory Protection: Ventilation:

Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

SECTION VI - FIRE AND EXPLOSION DATA

Boiling Point (°F):

Specific Gravity: Vapor Density (air = 1):

Evaporation Rate (WATER = 1):

N/D

Percent Volatile by Volume (%): 80% DILUTABLE Solubility in Water: Appearance and Odor: MILKY-WHITE OPAQUE LIQUID

pH (concentrate): 8.0

pH (use dilution of):

N/D

Flash Point (°F) (method used):

> 200F (TCC)

Flammable Limits: Extinguishing Media: Special Fire Fighting: LEL N/D UEL N/D Noncombustible.

Unusual Fire Hazards:

Wear self-contained positive pres. Breathing apparatus. Fire exposed drums should be cooled with stream of water.

ZEP MANUFACTURING COMPANY

MATERIAL SAFETY DATA SHEET PAGE 2 SECTION VII - REACTIVITY DATA

Stability:

Stable

Incompatibility (avoid):

Strong acids, alkalies, and oxidizers.

Polymerization: Will not occur. Hazardous Decomposition:

Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on Inert absorbent material (eg Zep-O-Zorb). Pick up and place residue in a suitable waste container or, if permitted, flush to sewer. Thoroughly rinse spill area with water. Waste Disposal Method:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg. Zep-O-Zorb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA Hazardous Waste Numbers: N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps, between 40-120 degrees F. Keep product away from skin and eyes. Store away from alkalies, acids, and oxidizers. Clothing or shoes which become contaminated with substance should be removed promptly and not reborn until thoroughly cleaned. Keep out of the reach of children.

SECTION X - TRANSPORTATION DATA

DOT Proper Shipping Name: NONE

DOT Hazard Class: N/A DOT I.D. Number: N/A

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED EPA CWA 40CFR Part 117 substance (RQ in a single container): : NONE

NOTICE

DOT Label/Placard: NONE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Satety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers, "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut. weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ABBREVIATIONS USED IN THE MSDS: BY SECTION ALPHABETICALLY:

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.
CAS #: Chemical Abstract Services Registry Number

universally accepted numbering system for chemical substances.

CBL: Combustible • At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS: Central Nervous System depressant reduces the activity of the brain and spinal cord. COR: Corrosive - Causes irreversible alterations in living

tissue (e.g. burns).
DESIGNATIONS: Chemical and common names of hazardous ingredients

Ingredients.

EIR: Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling lights).

ACGIH: American Conference of Governmental Industrial Hygienists. CEILING: The concentration that should not be exceeded

in the workplace during any part of the working exposure OSHA: Occupational Safety and Health Administration

PPL. Permissible Exposure Limit-A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM. Parts per million - unit of measure for exposure

(S) SKIN: Skin contact with substance can contribute to overall exposure.

STEL: Short Term Exposure Limit- Maximum concentration

for a continuous 15-minute exposure period.
7EV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.
FBL: Flammable - At temperatures under 100°F, chemical

gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

HAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX; Highly toxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 5 teaspoons (2 tablespoons).

teaspoons (2 tablespoons).

JRR; Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A: Not Applicable - Category is not appropriate for this

product.

N/D; Not Determined - Insufficient Information for a deter-

mination for this item.

RTECS #: Registry of Toxic Effects of Chemical Substances
- an unreviewed listing of published toxicology data on

SARA: Superfund Amendments and Reauthorization Act -

Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated exposure.

exposure. TOX: Toxic • The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.
CHRONIC EFFECT: Adverse effects that are most likely to occur from repeated exposure over a long period of time EST'D PELITLY: This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as quided to provide. uct as a whole. This value should serve as guide for provid-ing sale workplace conditions to nearly all workers.

HMIS CODES: Hazardous Material Identification System - a HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential or a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicted with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective

equipment.

PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through

breathing of vapors.

SKIN: A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks. MSHA; Mine Safety and Health Administration NIOSH; National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE: It refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline PERCENT VOLATILE: The percentage of the product (liquid

or solid) that will evaporate at 212°F and ambient pressure. SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expred to be produced upon product decomposition or fire. INCOMPATIBILITY: Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing ex-

cess pressure and heat. STABILITY; Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS; RCRA (Resource Conservation and Re-covery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA CWA: Clean Water Act

BO: Reportable Quantity - The amount of the specific ingrestorm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies. TSCA: Toxic Substances Control Act · a federal law requiring all commercial chemical substances to appear inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the fallure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.

(Notice Revised 8/91)

	·		-	REACTIVITY DATA	\
STABILITY	UNSTA	BLE		CONDITIONS TO AVOID	
Inert	STABL	E	X	None	
INCOMPATIBILITY (Materia None	Is to avoid)				11.
HAZARDOUS DECOMPOSIT	ION PRODUC	TS.			
None	ion / nobbe	213			
HAZARDOUS	MAYO	CCUR		CONDITIONS TO AVOID	, , , , , , , , , , , , , , , , , , ,
POLYMERIZATION	WILL N	OT OCCUR	X	None	
			L	SPILL OR LEAK PROCEI	DUDEC
STEPS TO BE TAKEN IN CA	SE MATERIA	L IC DELENCE		· · · · · · · · · · · · · · · · · · ·	DUNES
Avoid contact of si enclosed areas to release of gaseous	kin with I prevent s nitrogei	iquid nitro formation	ogen o	r its cold boil-off gas. Flush li	quid nitrogen spill with water to disperse. Ventilate caused by the evaporation of liquid nitrogen or the
well ventilated out	en to eva door loca	ation remo	ote fro	m work areas. Do not attempt	mote from work areas. Vent nitrogen gas slowly to a to dispose of residual nitrogen in compressed gas ylinder valve tightly closed and valve caps in place.
		-	SPE	CIAL PROTECTION INFO	DRMATION
result in asphyxiat	l breathir	ng appara		oxygen-deficient atmosphere	s. Caution! Respirators will not function. Use may
VENTILATION	sion!	LOCAL EXH	AUST		SPECIAL
Natural or mechanical where gas is present. MECHANICAL (General)		ai)	отнея Vents should be situated to avoid higher than normal concentration of nitrogen in work areas.		
compressed gas of EYE PROTECTION	ylinders. ggles or				ather work gloves are recommended when handling ded when handling high-pressure cylinders.
None					
				SPECIAL PRECAUTIO	NS*
FLAMMABLE GAS	nts must 6'' label. (Consult D			ansportation (DOT) regulations using DOT "NON- hipping of hazardous materials.
only in well ventila with care. Use a p Secure cylinders of flow into storage of For additional har	f liquid ni ated area ressure-r when in L containe adling rec	trogen or is. Compre educing ruse. Never r. Avoid dr commenda	essed egulat use d agging	gas cylinders contain nitroger or and pressure relief devices irect flame to heat a compres g, rolling, or sliding cylinders,	Prevent entrapment of liquid in closed systems. Use n at extremely high pressure and should be handled when connecting to lower pressure piping systems, sed gas cylinder. Use a check valve to prevent back even for a short distance. Use a suitable hand truck, consult Compressed Gas Association Pamphlet P-1.
be in heavy traffic main on cylinders material. Replace chemicals are pre	iners and areas to not con- the cylinesent. See	d cylinders prevent a nected for nder cap no compres	cciden r use. when t	ital knocking over or damage f Segregate full and empty cyli the cylinder is not in use. Avo	ders away from sources of heat. Storage should not from passing or falling objects. Valve caps should re- nders. Storage areas should be free of combustible old exposure to areas where salt or other corrosive for additional storage recommendations.
nitrogen is stored	containe in vacuu	ers meet l ım-insulat	DOT st	pecifications or American Soc trainers meeting DOT specific	clety of Mechanical Engineers (ASME) codes. Liquid cations or ASME codes.
temperatures. Ave cylinders should r filled without the	s a cryogoid use on the contract of the contra	genic liquof carbon illed exce on of the c	steel a pt by o wner i	and other materials which be qualified producers of compre	be selected for compatibility with extremely low come brittle at low temperatures. Compressed gas ssed gases. Shipment of a compressed gas cylinder f oxygen-deficient atmospheres are suspected or can mospheres.

*Various Government agencies (i.e., Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.

Emergency Number (800)457-2022 or (510)233-3737



Material Safety Data Sheet

CHEVRON DELO 100 Motor Oil SAE 40

CPS222404

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3746534
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR: BULK LUBE OIL PICK-UP WB FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: May 20, 1992
This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Minor change for indexing purposes only.

1. PRODUCT IDENTIFICATION

CHEVRON DELO 100 Motor Oil SAE 40

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910,1200)

PRODUCT NUMBER(S): CPS222404

PRODUCT INFORMATION: (800)582-3835

Revision Number: 13 Revision Date: 01/25/90 MSDS Number: 000260 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 13 Revision Date: 01/25/90 MSDS Number: 000260

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed.

5. FIRE PROTECTION

FLASH POINT: (COC) 446F (230C) Min.

AUTOIGNITION: NDA FLAMMABILITY: NA EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 13 Revision Date: 01/25/90 MSDS Number: 000260 NDA - No Data Available NA - Not Applicable

X-DOS021 (01-89)

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark Amber liquid.

BOILING POINT: NDA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.89 @ 15.6/15.60

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 14.3 cst @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills. Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

Based upon information reviewed to date, this product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5mg/m3, the OSHA PEL is 5mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON DELO 100 Motor Oil SAE 40

Revision Number: 13 Revision Date: 01/25/90 MSDS Number: 000260

CONTAINING

> 90.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536,CAS 64742547,CAS 64742627,CAS 64742650,CAS 72623837.

< 10.0% ADDITIVES INCLUDING THE FOLLOWING

< 1.5 % BUTYL BENZYL PHTHALATE

CAS85687 A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and

Reauthorization Act of 1986 and 40 CFR Part 372.

CERCLA 302.4 RQ=100 POUNDS

1.5 % ZINC ALKYL DITHIOPHOSPHATE

A toxic chemical subject to the reporting requirements of CAS68649423

Section 313 of Title III of the Superfund Amendments and

Reauthorization Act of 1986 and 40 CFR Part 372.

TLV - Threshold Limit Value PEL - Permissible Exposure Limit STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: ı. Immediate (Acute) Health Effects; NO

> 2. Delayed (Chronic) Health Effects; NO

Fire Hazard; NO

4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO

WHEN A COMPONENT OF THIS MATERIAL IS SHOWN IN THIS SECTION, THE REGULATORY LIST ON WHICH IT APPEARS IS INDICATED.

ZINC ALKYL DITHIOPHOSPHATE 01,10,11,

BUTYL BENZYL PHTHALATE 01,10,24,26,28,

REGULATORY LISTS:

01=SARA 313 02=MASS RTK 03=NTP Carcinogen 04=CA Prop. 65 05=MI 406 06=IARC Group 1 07=IARC Group 2A 08=IARC Group 2B 09=SARA 302/304

10=PA RTK 12=CERCLA 302.4 ll=NJ RTK

Revision Number: 13 Revision Date: 01/25/90 MSDS Number: 000260

13=MN RTK 14=ACGIH TLV 15=ACGIH STEL
16=ACGIH Calculated TLV 17=OSHA PEL 18=OSHA STEL
19=Chevron TLV 20=EPA Carcinogen 21=TSCA SECT 4
22=TSCA SECT 5 SNUR 23=TSCA SECT 6 RULE 24=TSCA SECT 12 EXPORT
25=TSCA SECT 8A CAIR 26=TSCA SECT 8D REPORT 27=TSCA SECT 8E

28=Canadian WHMIS

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

NDA. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

NDA. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

NDA. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

NDA. The hazard evaluation was based on data from similar materials.

INGESTION:

NDA. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils require a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

*****************	******

Revision Number: 13 Revision Date: 01/25/90 MSDS Number: 000260

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 13 Revision Date: 01/25/90 MSDS Number: 000260

RHAC INTERNATIONAL, INC.

SECTION I. PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

RMAC INTERNATIONAL, INC. 3601 N. Marine Dr. Troutdale, OR 97060

Preparation Date: June 17, 1992

Last Revision: N/A

Information Phone Number: (503) 665 3570 Emergency Phone Number: (206) 576 0120

.

Product Name: Tire Oil

Common Name: N/A

Chemical Name: Pyrolysis Condensate Formula: N/A

SECTION II COMPOSITION

Compos	LTION	
Middle	Distillates	

CAS No.

Exposure Limit
None Established

Range % 95%-100%

Product may contain the following carcinogenic (as determined by the respective agencies) components in excess of 0.1%:

Component	CAS No.	Agency	Exposure Limit
Benzene	71-43-2	OSHA	1 ppm
		ACGIH	10 ppm
Naphthalene	91-20-3	OSHA	10 ppm
		ACGIH	10 ppm
Ethenylbenzene	100-42-5	ACGIH	50 ppm
_	<i>;</i>	IARC	

Product is hazardous according to OSHA (1910.1200).

Boiling Point.....ND Gravity, API......17.3 Vapor Pressure.....ND Solubility in Water...NA Vapor Density.....ND Melting Point.....NA Reactivity in Water...Non Reactive Physical State.....Liquid

RMAC INTERNATIOAL, INC.

SECTION IV FIRE & EXPLOSION DATA

Flash Point: 140 F (PMCC)

Auto-Ignition Temp.: ND

Flammable Limits In

Air, Vol %:

LEL: ND

UEL: ND

Extinguisher Media: Water fog, foam, carbon dioxide or dry chemical.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus with full face piece operated in the positive pressure demand mode when fighting fires.

Unusual Fire & Explosion Hazards: Containers exposed to intense heat from fires should be cooled with water to prevent vapor pressure buildup which could result in container rupture.

Toxic Gases Produced: Carbon monoxide and unidentified organic compounds may be formed during combustion.

SECTION V REACTIVITY DATA

Stability: Stable

Hazardous Polymerization: Will not occur

Conditions to Avoid: Heat and flame.

Incompatibles: Strong oxidizing agents.

SECTION VI HEALTH EFFECTS

Acute Symptoms of Exposure: Liquid is mildly irritating to the skin. Prolonged or repeated liquid contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis. High vapor concentrations may be irritating to the nose, throat and respiratory tract and may cause CNS depression. Ingestion of product may result in vomiting. Aspiration of vomitus and product into the lungs may result in aspiration and chemical pneumonitis. Symptoms of CNS depression include headache, dizziness, nausea and unconsciousness. In extreme cases death may result.

Medical Conditions Aggravated by Exposure: Preexisting eye, skin and respiratory diseases may be aggravated by exposure to this product.

Normal Routes of Entry: Inhalation, skin and eye contact.

RMAC INTERNATIONAL, INC.

SECTION VI HEALTH EFFECTS (continued)

Carcinogenicity: Ethenylbenzene, naphthalene, benzene. See SECTION II.

Chronic Effects: Repeated skin contact may cause persistent irritation or dermatitis. This product contains ethenylbenzene, naphthalene and benzene. Prolonged and repeated exposure to one or more of these components has been associated with anemia and leukemia in humans and animals.

SECTION VII FIRST AID

- Eyes: Flush with copious amounts of water for 15 minutes while holding eyelids open. Get medical attention.
- Skin: Thoroughly wash exposed area with soap and water. Remove contaminated clothing. If irritation occurs, get medical attention. Launder contaminated clothing before re-use.
- Inhalation: Remove affected individual to fresh air and provide oxygen if breathing is difficult. Apply artificial respiration if victim is not breathing. Get medical attention.
- Ingestion: Do not induce vomiting. Keep victim warm, quiet and get medical attention. If vomiting occurs, keep head below hips to prevent aspiration of fluid into lungs.

SECTION VIII SPECIAL PRECAUTIONS AND ACCIDENTAL RELEASE MEASURES

Handling and Storage: Combustible liquid. For large spills eliminate all potential ignition sources. Wear appropriate respirator and protective clothing. Dam and dike spill to prevent spread. Fump liquid into salvage tank. Soak up remaining liquid with an absorbant such as sand, clay, earth or other absorbant material.

Small spills may be absorbed with paper, vermiculite or other absorbant and transferred to a hood or a suitable container for proper disposal.

- Accidental Release: Under EPA-CERCLA (Superfund), releases to the air, land or water which exceed the reportable quantity must be reported to the National Response Center, 800-424-8802. This product contains a component designated as a hazardous substance under Section 311 of EPA-CWA. Spills leading into or leading to waters that coause a sheen must be reported to the National Response Center, 800-424-8802.
- Waste Disposal: As a hazardous waste this product is considered an ignitable hazardous waste according to EPA-RCRA(40 CFR 261.21). Refer to latest EPA or state regulations regarding proper disposal.

RMAC INTERNATIONAL, INC.

SECTION VIII (continued)

Special Precautions: Keep liquid and vapor away from heat, sparks and flame. Extinguish pilot lights, cigarettes and other sources of ignition prior to use and until all vapors are gone. Vapors may travel to remote ignition sources and result in flash fires. Empty containers may contain explosive vapors. Do not cut, weld, drill or grind on or near containers. Ground fixed equipment and transfer containers to prevent accumulation of static electricity.

SECTION IX CONTROL MEASURES

Respiratory: Avoid prolonged or repeated exposure to vapors. If exposure exceeds occupational exposure limits (Section II), use a NIOSH-approved respirator to prevent overexposure. Use an air-supplying respirator or an air-purifying respirator for organic vapors according to 29 CFR 1910.134.

Protective Clothing: Wear safety glasses or goggles. Avoid repeated contact with skin. Chemical resistant gloves are recommended.

Other Protective Measures: Use explosion-proof ventilation as required to control vapor concentrations. Air-dry contaminated clothling in a well ventilated area. Launder before using.

DATA SHEET MEET THE REQUIREMENTS OF THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ACT AND CFR 1910.1200, AND ARE BELIEVED TO BE ACCURATE AND COMPILED FROM SOURCES BELIEVED TO BE RELIABLE. RHAC INTERNATIONAL, INC. HAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING THE ACCURACY OR COMPLETENESS OF THE INFORMATION AND DATA HEREIN. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE.

Emergency Number (800)457-2022 or (510)233-3737



Material Safety Data Sheet

CHEVRON Unleaded Gasoline

CPS201110

Page 1 of 11

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting

PRIESTLEY OIL & CHEMICAL 4070132

MATERIAL ORDERED FOR:

CO., INC.

TERM P/U MOGAS/MID-DIST

P O BOX 12570

WILLBRIDGE TERM

PORTLAND, OR 97212

PORTLAND, OR 97210

Print Date: July 24, 1992

1. PRODUCT IDENTIFICATION

CHEVRON Unleaded Gasoline

- DANGER! HARMFUL OR FATAL IF SWALLOWED CAN ENTER LUNGS
 - AND CAUSE DAMAGE.
 - VAPOR HARMFUL
 - LONG-TERM EXPOSURE TO VAPOR HAS CAUSED CANCER IN
 - LABORATORY ANIMALS
 - MAY CAUSE EYE AND SKIN IRRITATION
 - EXTREMELY FLAMMABLE
 - KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS201110

PRODUCT INFORMATION: (510)242-5357

MSDS Number: 000372 Revision Number: 15 Revision Date: 01/23/92

NŪĀ - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary. However, if irritation persists, see a doctor.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

If respiratory irritation or any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital. Note to Physician: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is slightly irritating to the eyes and could cause prolonged (days) impairment of your vision. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain, tears, swelling, redness, and blurred vision. Eye contact with the vapors, fumes, or spray mist from this substance could also cause similar signs and symptoms.

SKIN IRRITATION:

Prolonged or frequently repeated contact may cause the skin to become cracked or dry from the defatting action of this material.

DERMAL TOXICITY:

If absorbed through the skin, this substance is considered practically non-toxic to internal organs.

RESPIRATORY/INHALATION:

This substance is slightly toxic to internal organs if inhaled. The degree of injury will depend on the airborne concentration and duration of exposure. The target organ(s) is the nervous system. Inhalation of gasoline vapor at airborne concentrations exceeding 1000 ppm may cause signs and symptoms of central nervous system effects such as headache, dizziness, loss of appetite, weakness and loss of coordination. Vapor concentrations in excess of 5000 ppm may cause loss of consciousness, coma and death. Brief exposures to high vapor concentrations may also cause pulmonary edema and bronchitis. Intentional exposures to excessively high

Revision Number: 15 Revision Date: 01/23/92 MSDS Number: 000372

concentrations (e.g., when used as a drug of abuse) have been reported to result in clinical manifestations that may include convulsions, delirium, and hallucinations. These manifestations are not known to occur following accidental inhalation of gasoline vapor during normal operations.

This substance is slightly toxic to internal organs if swallowed. The degree of injury will depend on the amount absorbed from the gut. The target organ(s) is the nervous system. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

Do not get this material in your eyes. Eye contact can be avoided by wearing chemical goggles.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required. Refer to the OSHA Benzene Standard to determine what type of respirator is required based on exposure levels.

VENTILATION:

Use this material only in well ventilated areas.

5. FIRE PROTECTION

FLASH POINT: (P-M) < -49F (-45C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: 1.4 Upper: 7.6 EXTINGUISHING MEDIA:

Fire Fighting Foam: Alcohol Resistant Type (AR)

AFFF, CO2, Dry Chemical.

NFPA RATINGS: Health 1; Flammability 3; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

Revision Number: 15 Revision Date: 01/23/92 MSDS Number: 000372

FIRE FIGHTING PROCEDURES:

This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches.

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire document.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

Never siphon gasoline by mouth. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. Use only as a motor fuel. Do not use for cleaning, pressure appliance fuel, or any other such use. DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed. DO NOT TRANSFER LIQUID TO AN UNLABELED CONTAINER. DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbons; insoluble in water.

APPEARANCE: Orange to bronze liquid. BOILING POINT: 25 - 225C (Variable)

MELTING POINT: NA EVAPORATION: NDA

SPECIFIC GRAVITY: 0.7 - 0.8

VAPOR PRESSURE: 5 - 15 PSI (max.) @ 100F (Variable)

PERCENT VOLATILE (VOLUME %): 99+%

VAPOR DENSITY (AIR=1): 3-4

Revision Number: 15 Revision Date: 01/23/92 MSDS Number: 000372

NDA - No Data Available NA - Not Applicable

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

Eliminate all sources of ignition in vicinity of spill or released vapor.

Clean up spills immediately, observing precautions in Protective Equipment section. This material is considered to be a water pollutant and releases of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems.

U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number for the U.S. Coast Guard National Response Center is (800) 424-8802.

DISPOSAL METHODS:

Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

SPECIAL NOTES: Ethyl Alcohol is only added in limited specific distribution areas. COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Unleaded Gasoline

CONTAINING

GASOLINE (GENERIC)
300ppm ACGIH TLV
500ppm ACGIH STEL
300ppm OSHA TWA
500ppm OSHA STEL

INCLUDING

Revision Number: 15 Revision Date: 01/23/92 MSDS Number: 000372 NDA - No Data Available NA - Not Applicable

4.9 % BENZENE

CAS71432

A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

10ppm ACGIH TLV lppm OSHA TWA 5ppm OSHA STEL 25 ppm OSHA CEILING CERCLA 302.4 RQ=10 POUNDS

Refer to the OSHA Benzene Standard (29 CFR 1910.1028) for detailed training, exposure monitoring, respiratory protection and medical surveillance requirements before using this product.

ETHYLBENZENE 1.4 %

CAS100414

A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

100ppm ACGIH TLV 125ppm ACGIH STEL 100ppm OSHA TWA 125ppm OSHA STEL CERCLA 302.4 RQ=1000 POUNDS

< 0.9 % XYLENE-P

CAS106423

A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. 150 ppm ACGIH STEL

CERCLA 302.4 RQ=1000 POUNDS

4.6 % XYLENE-M

CAS108383

A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

100ppm ACGIH TLV 150ppm ACGIH STEL 100ppm OSHA TWA 150ppm OSHA STEL

CERCLA 302.4 RQ=1000 POUNDS

2.2 % XYLENE-0

CAS95476

A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

100ppm ACGIH TLV 150ppm ACGIH STEL 100ppm OSHA TWA 150ppm OSHA STEL

CERCLA 302.4 RQ=1000 POUNDS

6.5 % TOLUENE

CAS108883 A toxic chemical subject to the reporting requirements of

MSDS Number: 000372 Revision Number: 15 Revision Date: 01/23/92 NDA - No Data Available NA - Not Applicable

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

100ppm ACGIH TLV 150ppm ACGIH STEL 100ppm OSHA TWA 150ppm OSHA STEL 300 ppm OSHA CEILING

CERCLA 302.4 RQ=1000 POUNDS

< 3.0 % HEXANE

CAS110543 50ppm ACGIH TLV 1000 ppm ACGIH STEL 50ppm OSHA TWA

< 2.4 % CYCLOHEXANE

CAS110827 A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and

Reauthorization Act of 1986 and 40 CFR Part 372.

300ppm ACGIH TLV 300ppm OSHA TWA

CERCLA 302.4 RQ=1000 POUNDS

CAN CONTAIN

< 15.0 % METHYL TERT BUTYL ETHER

CAS1634044 A toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and

Reauthorization Act of 1986 and 40 CFR Part 372.

OR

< 10.0 % ETHYL ALCOHOL

CAS64175 1,000ppm ACGIH TLV

1000ppm OSHA TWA

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT basic descriptions can vary based on package quantity and may not coincide with international description requirements. Consult the Hazardous Materials Regulations in 49CFR and the appropriate Dangerous Goods Regulations to confirm description applicability to specific shipments.

DOT SHIPPING NAME: GASOLINE

DOT HAZARD CLASS: FLAMMABLE LIQUID DOT IDENTIFICATION NUMBER: UN1203

Revision Number: 15 Revision Date: 01/23/92 MSDS Number: 000372

```
SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects; YES

2. Delayed (Chronic) Health Effects; YES

3. Fire Hazard; YES

4. Sudden Release of Pressure Hazard; NO

5. Reactivity Hazard; NO

The following components of this material are found on the regulatory.
```

The following components of this material are found on the regulatory lists indicated by the number below the component name:

ETHYLBENZENE

is found on lists: 01,02,10,11,12,13,14,15,17,18,26,28,

XYLENE-P

is found on lists: 01,02,10,11,12,15,26,28,

XYLENE-M

is found on lists: 01,02,10,11,12,14,15,17,18,26,28,

TOLUENE

is found on lists: 01,02,04,10,11,12,13,14,15,17,18,26,28,29,

HEXANE

is found on lists: 02,10,11,13,14,15,17,28,

CYCLOHEXANE

is found on lists: 01,02,10,11,12,13,14,17,26,28,

METHYL TERT BUTYL ETHER

is found on lists: 01,10,11,21,24,26,

ETHYL ALCOHOL

is found on lists: 02,04,10,11,13,14,17,28,

BENZENE

is found on lists: 01,02,03,04,06,10,11,12,13,14,17,18,20,28,29,

XYLENE-O

is found on lists: 01,02,10,11,12,14,15,17,18,26,28,

GASOLINE (GENERIC)

is found on lists: 04,08,14,15,17,18,20,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	ll=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25≃TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

The Draize Eye Irritation Score (range, 0-110) in rabbits is 0.

SKIN IRRITATION:

The Draize Skin Primary Irritation Score (range, 0-8) for a 4-hour exposure (rabbits) is 0.98. This material was not a skin sensitizer in

Revision Number: 15 Revision Date: 01/23/92 MSDS Number: 000372 NDA - No Data Available NA - Not Applicable the modified Buehler Guinea Pig Sensitization Test.

DERMAL TOXICITY:

The dermal LD50 in rabbits is > 5 ml/kg.

RESPIRATORY/INHALATION:

No product toxicology data available.

INGESTION:

The oral LD50 in rats is > 5 ml/kg.

ADDITIONAL TOXICOLOGY DATA:

Lifetime inhalation of whole gasoline vapor has caused increased liver tumors in female mice. The mechanism of this response is still being investigated but it is thought to be an epigenetic process unique to the female mouse. Inhalation exposure to whole gasoline vapor also caused kidney damage and eventually kidney cancer in male rats. No other animal model studied has shown these adverse kidney effects and there is no physiological reason to believe that they would occur in man.

The data above is obtained from studies sponsored by the American Petroleum Institute (API).

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains benzene. The OSHA Benzene Standard (29 CFR 1910.1028) contains detailed requirements for training, exposure monitoring, respiratory protection and medical surveillance triggered by the exposure level. Refer to the OSHA Standard before using this product. Repeated or prolonged breathing of benzene vapors has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal. No birth defects have been shown to occur in pregnant laboratory animals exposed to doses not toxic to the mother. However, some evidence of fetal toxicity such as delayed physical development has been seen at such levels. The available information on the effects of benzene on human pregnancies is inadequate but it has been established that benzene can cross the human placenta.

This product contains n-hexane. Prolonged or repeated skin contact or breathing of vapors may cause nerve damage characterized by progressive weakness and numbness in the arms and legs. Recovery ranges from no recovery to complete recovery depending upon the severity of the nerve damage.

This product contains toluene. Toluene has been reported to decrease immunological responses in test animals. It has also been reported that when young rats were exposed to 1000 ppm toluene for 14 hours daily, for two weeks, irreversible hearing loss was detected. The same daily exposure to 700 ppm for as long as 16 weeks was without effect. Since the level necessary to produce hearing loss is greater than 7 times the ACGIH TLV-TWA for toluene, worker exposures at or below 100 ppm is not expected to cause any adverse effects. There are also reports that chronic solvent abusers (glue sniffers, solvent huffers) who deliberately inhale high concentrations (several thousand ppm) of toluene for prolonged periods (up

Revision Number: 15 Revision Date: 01/23/92 MSDS Number: 000372 NDA - No Data Available NA - Not Applicable to ten hours/day) have suffered liver, kidney and brain damage. Toluene may also cause mental and/or growth retardation in the children of female solvent abusers who directly inhale toluene when they are pregnant. Toluene caused growth retardation in rats when administered at doses that were toxic to the mothers (1500 ppm). Concentrations of up to 5000 ppm did not cause birth defects. There were no effects in the offspring at doses that did not intoxicate the pregnant rats. The exposure level at which no effects were seen (No Observed Effect Level, NOEL) is 750 ppm. We recommend that the precautions outlined in this MSDS be followed to keep toluene concentrations below the recommended exposure standards.

This product contains xylene, a chemical that has been reported to cause developmental toxicity in rats and mice exposed by inhalation during pregnancy. The effects noted consisted of delayed development and minor skeletal variations; additionally, when pregnant mice were exposed by ingestion to a level that killed nearly one-third of the test group, lethality (resorptions) and malformations (primarily cleft palate) occurred. Malformations have not been reported following inhalation exposure. Because of the very high levels of exposure used in these studies, we do not believe that their results imply an increased risk of reproductive toxicity to workers exposed to xylene levels at or below the exposure standard.

Xylene has given negative results in several mutagen testing assays including the Ames assay. In a cancer study sponsored by the National Toxicology Program (NTP), technical grade xylene gave no evidence of carcinogenicity in rats or mice dosed daily for two years.

This product can contain methyl tert butyl ether (MTBE). Most mutagenicity data on MTBE, except for the in vitro mouse lymphoma test, indicate that it is not mutagenic. MTBE caused birth defects in mice exposed to 8,000 ppm throughout pregnancy. No birth defects were observed in mice at 1,000 ppm or in rats or rabbits at any dose of MTBE. These results suggest that the risk of birth defects in humans from MTBE is negligible at the anticipated exposure concentrations.

Whole gasoline exhaust was reviewed by the International Agency for Research on Cancer (IARC) in their Monograph Volume 46 (1989). Evidence for causing cancer was considered inadequate in animals and inadequate in humans. IARC placed whole gasoline exhaust in Category 2B, considering it possibly carcinogenic to humans.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination

Revision Number: 15 Revision Date: 01/23/92 MSDS Number: 000372

of the suitability of the material for his particular purpose.

Revision Number: 15 MSDS Number: 000372 Revision Date: 01/23/92 NDA - No Data Available

NA - Not Applicable

CHRISTENSON OIL 3747 N. SUTTLE RD. PORTLAND, OR. 97217 (503)286-1673

MORRISON OIL MSDS #MOAFM

PAGE 1 OF 7

PRODUCT CODE NO.: NONE

MANUFACTURER:

TRANSPORTATION EMERGENCIES:

MORRISON OIL COMPANY, INC. 3747 N. SUTTLE RD. P. O. BOX 17339 PORTLAND, OREGON 97217

CALL CHEMTREC (800) 424-9300 CONTINENTAL U.S.

CONTACT FOR FURTHER INFORMATION: CALL (503) 286-1673

PRODUCT IDENTIFICATION

PRODUCT NAME : DUREX AFM PROPYLENE GLYCOL ANTI-FREEZE

. NONYMS : PG ANTI-FREEZE

GENERIC NAME : HD DIESEL ANTI-FREEZE

CHEMICAL FAMILY : GLYCOLS

DOT PROPER

SHIPPING NAME : N/A

ID NUMBER : NONE

SECTION I - INGREDIENTS (% w/w, unless otherwise noted)

 PROPYLENE GLYCOL
 CAS#000057-55-6
 90-95%

 SODIUM HYDROXIDE
 CAS#1310-73-2
 0-2%

 BENZOIC ACID
 CAS#65-85-0
 2-4%

 INORGANIC/ORGANIC SALTS
 2-4%

 WATER
 2-4%

THIS DOCUMENT IS PREPARED PURSUANT TO THE OSHA HAZARD COMMUNICATION STANDARD (20 CFR 1910.1200). IN ADDITION, OTHER SUBSTANCES NOT 'HAZARDOUS' PER THIS OSHA STANDARD MAY BE LISTED. WHERE PROPRIETARY INGREDIENT SHOWS, THE IDENTITY MAY BE MADE AVAILABLE AS PROVIDED IN THIS STANDARD.

IORRISON OIL MSDS #MOAFM

PAGE 2 OF 7

SECTION II - EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT:

IRRIGATE IMMEDIATELY WITH WATER FOR AT LEAST 5 MINUTES. GET MEDICAL ATTENTION IF ANY IRRITATION PERSIST.

SKIN CONTACT:

WASH OFF IN FLOWING WATER OR SHOWER. NOT EXPECTED TO PRESENT A SIGNIFICANT SKIN HAZARD UNDER ANTICIPATED CONDITIONS OF NORMAL USE.

INHALATION (BREATHING):

REMOVE TO FRESH AIR IF EFFECTS OCCUR. CONSULT MEDICAL.

INGESTION (SWALLOWING):

INDUCE VOMITING IF LARGE AMOUNTS ARE INGESTED. CONSULT MEDICAL. NOT EXPECTED TO PRESENT A SIGNIFICANT INGESTION HAZARD UNDER ANTICIPATED CONDITIONS OF NORMAL USE.

NOTE TO PHYSICIAN:

NO SPECIFIC ANTIDOTE. SUPPORTIVE CARE. TREATMENT BASED ON JUDGMENT OF THE PHYSICIAN IN RESPONSE TO REACTIONS OF THE PATIENT.

MORRISON OIL MSDS #MOAFM

PAGE 3 OF 7

SECTION III - POTENTIAL ADVERSE HEALTH EFFECTS

YE CONTACT:

MAY CAUSE MINOR EYE IRRITATION.

KIN ABSORPTION:

NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY HEALTH HAZARD ARE EXPECTED TO OCCUR AS A RESULT OF SKIN ABSORPTION EXPOSURE.

SKIN IRRITATION:

NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY ADVERSE HEALTH HAZARD ARE EXPECTED TO OCCUR AS A RESULT OF SKIN EXPOSURE.

[NHALATION (BREATHING):

A SINGLE PROLONGED (HOURS) INHALATION EXPOSURE IS NOT LIKELY TO CAUSE ADVERSE EFFECTS. MISTS ARE NOT LIKELY TO BE HAZARDOUS.

INGESTION (SWALLOWING):

SINGLE DOSE ORAL TOXICITY IS LOW. THE LD50 FOR FEMALE RATS IS ABOUT 20.3 G/KG. NO SIGNIFICANT SIGNS OR SYMPTOMS INDICATIVE OF ANY ADVERSE HEALTH HAZARD ARE EXPECTED TO OCCUR AS A RESULT OF INGESTION.

YSTEMIC & OTHER EFFECTS:

REPEATED EXCESSIVE INGESTION MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS. NO CARCINOGENIC EFFECTS HAVE BEEN SEEN IN LONG-TERM ANIMAL STUDIES. BIRTH DEFECTS ARE UNLIKELY. EXPOSURES HAVING NO ADVERSE EFFECTS ON THE MOTHER SHOULD HAVE NO EFFECT ON THE FETUS. IN ANIMAL STUDIES, HAS BEEN SHOWN NOT TO INTERFERE WITH REPRODUCTION. RESULTS OF MUTAGENICITY TESTS IN VITRO (TEST TUBE) AND IN ANIMALS HAVE BEEN NEGATIVE. NO CHRONIC HEALTH EFFECTS ARE EXPECTED FROM NORMAL USE.

IORRISON OIL MSDS #MOAFM

PAGE 4 OF 7

SECTION IV - SPECIAL PROTECTION INFORMATION

TENTILATION:

GOOD GENERAL VENTILATION SUFFICIENT.

RESPIRATORY PROTECTION:

NO RESPIRATORY PROTECTION SHOULD BE NEEDED.

SKIN PROTECTION:

NO PRECAUTIONS OTHER THAN CLEAN BODY-COVERING SHOULD BE NEEDED.

EYE PROTECTION:

USE SAFETY GLASSES.

EXPOSURE GLADEL TUNE (S) 4

10 MG/H: OR PROPYLENE GLYCOL MIST. 400 PPM FOR PROPYLENE GLYCOL VAPORS. PROPYLENE GLYCOL VAPORS.

Data (O.), Colored Service de Versione de Versione de Versione de Versione de Versione de Versione de Versione

STABLE MAN (CEONS CONTINUES NO AVOID):

STABLE ON THE NORMAL OPERATING TEMPERATURE RANGE OF -30F TO 250F.

INCOMPATITE OF THE MATERIALS TO AVOID):

OX LDuyZank(e)

HAZARDOUS DECOMMENT OF RODUCTS:

NONE.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR.

ORRISON OIL MSDS #MOAFM

PAGE 5 OF 7

SECTION VI - SPILL OR LEAK PROCEDURES

HIGHWAY OR RAILWAY SPILLS CALL CHEMTHEC 800-424-9300 CONT. U.S.

ACTION TO TAKE FOR SPILLS/LEAKS:

COVER WITH ABSORBENT MATERIAL, SOAK UP AND SWEEP INTO BAG.

WASTE DISPOSAL METHOD:

INCINERATE OR BURY AWAY FORM WATER SUPPLIES IN ACCORDANCE WITH LOCAL REGULATIONS.

SECTION VII - STORAGE AND SPECIAL PRECAUTIONS

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: EXERCISE REASONABLE CARE AND CAUTION.

SECTION VIII - FIRE AND EXCLOSION HAZARD DATA

HAZARD RANKING

HEALTH HAZARO, D. 0 = LEAST
FLAMMABILITUS 1 1 1 = SLIGHT HEALTH HAZARDA HAZARD

REACTIVEVENDS

2 MODERATE 3 = HIGH

N/A

CLASSIFICATION

DOT FLAMMABILITY FLASH POINT

235°F,

113°C (TCC)

EXTINGUISHING MEDIA:

CLASS

WATER FOG, ALCOHOL RESISTANT, DRY CHEMICAL.

FIRE & EXPLOSION HAZARDS:

HEATED VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL TO A SOURCE OF IGNITION.

FIRE FIGHTING PROCEDURES:

FOR FIRES INVOLVING LARGE QUANTITIES OF PRODUCT WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL TURN-OUT GEAR.

FLAMMABLE LIMITS:

LFL: 2.6% @ 100C UFL: 12.5% @ 130C

MATERIAL SAFETY DATA SHEET

IORRISON OIL MSDS #MOAFM

PAGE 6 OF 7

APPROX BOILING POINT	VAPOR DENSITY	EVAPORATION RATE	% VOLATILE
370F, 188C	2.62	< 1	NIL
SOLUBILITY IN WATER	SPECIFIC GRAVITY	APPEARANCE	ODOR
100%	1:050	COLORLESS	ODORLESS LIQUID

NONE REQUIRED.

CTION XI - REGUISATION (Not meant to be all-inclusive--selected regular to a selected)

NOTICE:

THE INFORMATION.

IS PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE AS SECTIVE DATE SHOWN ABOVE. HOWEVER, NO WARRANTY, EXPRESS OR SECTIVE DATE SHOWN ABOVE. HOWEVER, NO WARRANTY, EXPRESS OR SECTION TO ANOTHER; IT IS THE BUYER'S RESPONSITE THAT ITS ACTIVITIES COMPLY WITH FEDERAL, STATE OR PROVINCIAL, STATE OR PROVINCIAL, AND LOCAL SECTIONS. SEE MSDS SHEET FOR HEALTH AND SAFETY INFORMATION.

U.S. REGULATIONS:

SARA HAZARD CATEGORY: THIS PRODUCT HAS BEEN REVIEWED ACCORDING TO THE EPA "HAZARD CATEGORIES" PROMULGATED UNDER SECTIONS 311 AND 312 OF THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 (SARA TITLE III) AND IS CONSIDERED, UNDER APPLICABLE DEFINITIONS, TO MEET THE FOLLOWING CATEGORIES: A DELAYED HEALTH HAZARD.

MATERIAL SAFETY DATA SHEET

IORRISON OIL MSDS #MOAFM

PAGE 7 OF 7

SECTION XII - DOCUMENTARY INFORMATION

SSUE DATE

07/21/92

PRODUCT CODE NO.

NONE

ASDS NO.

MOAFM

PREV. PROD. CODE NO.

NONE

PREV. MSDS NO.

NONE

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE.

This information and product are furnished on the condition that the son receiving them shall make his own determination as to the tability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

MSDS (Material Safety Data Sheet)

Information on Products Distributed and/or Manufactured by Alaskan Copper Works, Alaskan Copper & Brass Company or Stainless Piping Systems, Inc.



CAUTION

DUST FUMES MIST

MAY BE HAZARDOUS TO YOUR HEALTH DURING CERTAIN MANUFACTURING PROCEDURES

WEAR

RESPIRATORS/GLOVES/SAFETY GLASSES
USE ADEQUATE VENTILATION
AS REQUIRED

SEE MSDS FILE FOR SPECIFIC SAFETY PRECAUTIONS BEFORE HANDLING

This information and data is being provided on the following pages as required by the Office of Health Compliance Assistance (OSHA) Hazard Communication Standard (HCS), 29 CFR 1910.1200), State of Washington, HCS WAC 296-62-054 through WAC 296-62-05425 and Oregon Occupational Safety and Health Code, Oregon Administrative Rules (OAR) Chapter 435, Division 155. The products manufactured by and distributed by ALAS-KAN do not, in and of themselves, constitute a hazardous material under these regulations. However, some of the elements contained in these products have been determined to be hazardous by OSHA. These can only be released through certain manufacturing procedures such as burning, melting, welding, sawing, brazing, grinding and machining.

In compliance with these regulations, we are providing you with a summary MSDS for all of our products you currently use or might use in the future.

While the information contained herein is believed to be correct, no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications, hazards connected with the use of the material, or the results to be obtained from the use thereof. User assumes all risks and liability of any use, processing or handling of any material, variations in methods, conditions and equipment to store, handle, or process the materials. Hazards connected with the use of the material are solely the responsibility of the user.

UPDATED August 1, 1992

Stair	iless	Steel	Wrou	ght A	lloys						
	UNS	ASTM		Manga-				Molyb-	Chrom-		Other
	Desig-	Mat'l	Carbon	nese	phorus	Sulfur	Silicon	denum	ium*	Nickel*	Elements
Туре	nation	Spec	% Max	% Max	% Max	% Max	% Max	%	%	%	%
304	S30400	A 240	.08	2.0	.045	0.03	1.0		18.0-20.0	8.0-10.5	N .10 max
304L	S30403	A 240	.03	2.0	.045	0.03	1.0		18.0-20.0	8.0-12.0	N .10 max
304H	S30409	A 240	.0410	2.0	.045	0.03	1.0		18.0-20.0	8.0-10.5	
309S	S30908	A 240	.08	2.0	.045	0.03	1.0		22.0-24.0	12.0-15.0	
310S	S31008	A 240	.08	2.0	.045	0.03	1.5		24.0-26.0	19.0-22.0	
316	S31600	A 240	.08	2.0	.045	0.03	1.0	2.0-3.0	16.0-18.0	10.0-14.0	N .10 max
316L	S31603	A 240	.03	2.0	.045	0.03	1.0	2.0-3.0	16.0-18.0	10.0-14.0	N .10 max
316H	S31609	A 240	.0410	2.0	.045	0.03	1.0	2.0-3.0	16.0-18.0	10.0-14.0	
317	S31700	A 240	.08	2.0	.045	0.03	1.0	3.0-4.0	18.0-20.0	11.0-15.0	N .10 max
317L	S31703	A 240	.03	2.0	.045	0.03	1.0	3.0-4.0	18.0-20.0	11.0-15.0	N .10 max
321	S32100	A 240	.08	2.0	.045	0.03	1.0		17.0-19.0	9.0-12.0	Ti=5 x C to .7
321H	S32109	A 240	.0410	2.0	.045	0.03	1.0		17.0-19.0	9.0-12.0	Ti=4 x C to .7
347	S34700	A 240	.08	2.0	.045	0.03	1.0		17.0-19.0	9.0-13.0	Cb+Ta=10 x C to 1.1
347H	S34709	A 240	.0410	2.0	.045	0.03	1.0		17.0-19.0	9.0-13.0	Cb+Ta=8 x C to 1.0
**	S31803	A 240	.03	2.0	.030	0.02	1.0	2.5-3.5	21.0-23.0	4.5-6.5	N .0820
***	S32550	A 240	.04	1.5	.040	0.03	1.0	2.0-4.0	24.0-27.0	4.5-6.5	Cu 1.5-2.5
											N .1025
254SMO	S31254	A 240	.020	.020-1.0	.030	.01	.80	6.0-6.5	19.5-20.5	17.5-18.5	Cu 0.5-1.0
											N 0.1822
AL-6XN	N08367	B 688	.030	2.0	.040	.03	1.0	6.0-7.0	20.0-22.0	23.5-25.5	Cu 0.75-max
											N 0.1825

Stainless	Steel	Cast	Allovs
-----------	-------	------	--------

A.C.I. ¹	Wrought	Carbon	Manganese	Phosphorus	Sulfur	Silicon	Chronmium*	Nickel*	Other Elements
Type	Equivalent	% Max	% Max	% Max	%Max	% Max	%	%	%
CF-8	304	.08	1.5	.04	.04	2.0	18.0-21.0	8.0-11.0	Mo .50 max
CF-3	304L	.03	1.5	.04	.04	2.0	17.0-21.0	8.0-12.0	Mo .50 max
CH-20	309	.20	1.5	.04	.04	2.0	22.0-26.0	12.0-15.0	Mo .50 max
CK-20	310	.20	1.5	.04	.04	1.75	23.0-27.0	19.0-22.0	Mo .50 max
CF-8M	316	.08	1.5	.04	.04	1.5	18.0-21.0	9.0-12.0	Mo 2.0-3.0
CF-3M	316L	.03	1.5	.04	.04	1.5	17.0-21.0	9.0-13.0	Mo 2.0-3.0
CG-8M	317	.08	1.5	.04	.04	1.5	18.0-21.0	9.0-13.0	Mo 3.0-4.0
****	317L	.03	1.5	.04	.04	1.5	18.0-21.0	9.0-13.0	Mo 3.0-4.0
CF-8C	347	.08	1.5	.04	.04	2.0	18.0-21.0	9.0-12.0	Cb= 8 x C to 1.0
CN-7M	20CB	.07	1.5	.04	.04	1.5	19.0-22.0	27.5-30.5	Mo 2.0 to 3.0
									Cu 3.0 to 4.0

Aluminum Wrought Alloys

	UNS Desig-	ASTM Mat'l	Manganese	Magnesium	Iron	Zinc	Silicon	Titanium	Copper	Chromium*	Aluminum
Alloy	nation	Spec	% Max	%	% Max	% Max	% Max		% Max		%
3003	A93003	B 209	1.0-1.5		.7	.10	.6		.0520		r
5083	A95083	B 209	.40-1.0	4.0-4.9	.40	.25	.40	.15	.10	.0525	r
5086	A95086	B 209	.207	3.5-4.5	.50	.25	.40	.15	.10	.0525	r
6061	A96061	B 209	.15	.80-1.2	.7	.25	.408	.15	.1540	.0435	r

Note: Chemistry for wrought alloys is for sheet and plate only. Similar material specifications apply to other forms.

¹ Formerly Alloy Casting Institute, now called Steel Founders Society of America ^{*} Items with a single ^{*} are suspected carcinogens in humans: see Pages 4 -6 for detailed information.

^{**}Commonly referred to as Al 2205™

*** Commonly referred to as Ferralium 255®

^{****} Not an ACl alloy, but frequently identified as CG-3M

r = remainder

Nickel B Symbol ¹	UNS	ASTM		Manga-	Phos-			Molyb-	Chrom-		Other
and	Desig-	Mat'l	Carbon	nese	phorus	Copper	Iron	denum	ium*	Nickel*	Elements
Grade	nation	Spec	% Max	% Max	% Max	% Max	% Max	%	%	%	% Max
N (200)	N02200		.15	.35		.25	.40			99.0 min	Si .35 S .01
NL (201)	N02201	B 162	.02	.35		.25	.40			99.0 min	Si .35 S .01
NC (400)	N04400	B 127	.30	2.0		28.0-34.0	2.5			63.0 min	Si .5 S .024
NC1 (600)	N06600	B 168	.15	1.0		.50	6.0-10.0		14.0-17.0	72.0 min	Si .5 S .015
NIC (800)	N08800	B 409	.10	1.5		.75	39.5 min		19.0-23.0	30.0-35.0	Si 1.0 S .015
											Ti .1560
	1100000	D 500	4.0						17.0.00.0	040070	Al .1560
330 (RA 330)	N08330	B 536	.10	2.0	.030	1.0	r		17.0-20.0	34.0-37.0	Si .75-1.5 S .03 Pb* .005 Sn .025
NICMC (825)	N08825	B 424	.05	1.0		1.5 - 3.0	22.0 min	2525	19.5-23.5	38.0-46.0	Si .5 S .03
INICIVIC (023)	110002	D 424	.03	1.0		1.5 - 5.0	22.0 111111	2.0-3.0	19.5-25.5	30.0-40.0	Al .2 Ti .6-1.2
20CB	N08020	B 463	.07	2.0	.045	3.0-4.0	r	2.0-3.0	19.0-21.0	32.0-38.0	Si 1.0 S .035
											Cb+Ta8xCto1.0
HB-2	N10665	B 333	.02	1.0	.040		2.0	26.0-30.0	1.0	r	Si .10 S .03
(Hast B-2)											Co 1.0
HC276	N10276	B 575	.02	1.0	.040		4.0-7.0	15.0-17.0	14.5-16.5	r	Si .08 S .03
(Hast C-276)											Co 2.5 V .35
	Noodes								01000		W 3.0-4.5
HC4	N06455	B 5/5	.015	1.0	.040	1.5-2.5	8.0-21.0	6.0-8.0	21.0-23.5	r	Si 1.0 S .03
(Hast C-4)											Co .2 W .5 V .5 B .01
											V .5 B .01 Al+Ti .5
HN	N10003	R 434	.0408	1 0	.015	.35	5.0	15.0-18.0	6.0-8.0	r	Si 1.0 S .02
(Hast N)	1110000	D 707	.00	1.0	.010	.00	0.0	10.0 10.0	0.0 0.0	•	Co .2 W .5
(1.60(14)											V .5 B .01
											Al+Ti 5
HX	N06002	B 435	.0515	1.0	.040		17.0-20.0	8.0-10.0	20.5-23.0	r	Si 1.0 S .03
(Hast X)											Co.5-2.5 W.2-1.0
NCMC (625)	N06625	B 443	.10	.50	.015		5.0	8.0-10.0	20.0-23.0	58.0 min	Si .5 S .15
									•		Co 1.0 (if
											determined)
											Al .4 Ti .4
00.41	Nonna	D 005						1050	40.0.00.0	00.0.00.0	Cb+Ta 3.15-4.15
904L	N08904	B 625	.020	2.0	.045	1.0-2.0	r	4.0-5.0	19.0-23.0	23.0-28.0	Si 1.0 S .035

Titaniu	m Wrou	aht Allo)VS

Grade	ASTM Mat'l Spec	Nitrogen % Max	Carbon % Max	Hydrogen % Max	Iron % Max	Oxygen % Max	Titanium %	Residuals (each) % Max	Residuals (total) % Max	Other Elements %
Grade 1	B 265	.03	.10	.015	.20	.18	r	.10	.40	
Grade 2	B 265	.03	.10	.015	.30	.25	r	.10	.40	
Grade 3	B 265	.05	.10	.015	.30	.35	r	.10	.40	
Grade 4	B 265	.05	.10	.015	.50	.40	r	.10	.40	
Grade 5	B 265	.05	.10	.015	.40	.20	r	.10	.40	Al 5.5-6.75 V 3.5-4.5
Grade 6	B 265	.05	.10	.020	.50	.20	r	.10	.40	Al 4.0-6.0 Sn 2.0-3.0
Grade 7	B 265	.03	.10	.015	.30	.25	r	.10	.40	Pd* .1225
Grade 10	B 265	.05	.10	.020	.35	.18	r	.10	.40	Sn 3.75-5.25 Mo 10.0-13.0 Zr 4.5-7.5
Grade 11	B 265	.03	.10	.015	.20	.18	r	.10	.40	Pd* .1225
Grade 12	B 265	.03	.08	.015	.30	.25	r	.10	.40	Mo .24 Ni .69

r = remainder

Note: Chemistry for wrought alloys is for sheet and plate only. Similar material specifications apply to other forms.

* Items with a single * are suspected carcinogens in humans: see Pages 4 -6 for detailed information.

Chemical Analysis

Copp	er Alloys¹												
UNS					Man-		Phos-		Tellur-	Zirco-			
Desig-	Common	Copper	Zinc	Lead*	ganese	Tin	phorus	Arsenic*	ium	nium .	Silicon	Cobalt	Beryllium
nation	Name	%	%	%	%	%	%	%	%	%	%	%	%
C10100	Oxygen Free Electronic	99.99+					.0003		.0010				
C10200	Oxygen Free	99.95+											
C10300	OFXLP	99.95+											
C11000	Electrolytic Tough Pitch	99.99+											
C12000	Phosphorus Deoxidized	99.9+					.008						
C12200	Phosphorus Deoxidized	98.98					.020						
C14500	Tellurium Bearing	99.49					.010		.50				
C17200	Beryllium Copper	98.1+									.20	2.5	1.80-2.0
C17300	Beryllium Copper	97.7+	.40									.20	1.80-2.0
C17500	Beryllium Copper	96.9+									.20		.2060

UNS					Man-		Phos-		Tellur-				
Desig-	Common	Copper	Zinc	Lead*	ganese	Tin	phorus	Arsenic*	ium	Nickel*	Silicon	Iron	Aluminum
nation	Name	%	%	%	%	%	%	%	%	%	%	%	%
C22000	Commercial Bronze	90.00	10.0										
23000	Red Brass, 85%	85.00	15.0					-					
C24000	Low Brass, 80%	80.00	20.0										
C26000	Cartridge Brass	70.00	30.0										
C27000	Yellow Brass, 70%	65.00	35.0										
27200	Yellow Brass, 63%	63.00	37.0										
C27400	Yellow Brass, 62%	62.00	38.0										
C31400	Leaded Commercial Bronze	89.00	9.1	1.90									
C33000	Low Leaded Brass (Tube)	66.50	33.0	.50									
C34900	Low Leaded Brass (Tube)	66.29	37.5	.30									
C35600	Extra High Leaded Brass	62.50	35.0	2.50									
C36000	Free Cutting Brass	61.50	35.3	3.25									
C38500	Architectural Bronze	57.00	40.0	3.00									
244300	Admiralty, Arsenical	71.00	27.96			1.0		.040				- "	
C46400	Naval Brass, Uninhibited	60.00	39.25			.75					-		
C48200	Naval Brass, High Leaded	60.00	38.55	.70		.75							
C51000	Phosphor Bronze, 5% A	94.80				5.0	.20						
C51100	Phosphor Bronze	95.60				4.2	.20						
261400	Aluminum Bronze	90.25										2.75	7.00
263000	Aluminum-Nickel Bronze	82.00			1.0					5.0		2.50	9.50
C64200	Aluminum-Silicon Bronze	90.75					_				1.85		6.95
265100	Low Silicon Bronze B	98.25			.25						1.50		
265500	High Silicon Bronze A	95.80			1.1						3.10		
267500	Manganese Bronze A	58.50	39.25		.25	1.0						1.00	
270600	90-10 Copper-Nickel	88.35			.40					10.0		1.25	
71500	70-30 Copper-Nickel	68.90			.60					30.0		.50	
275200	18% Spring Nickel Silver	64.50	17.25		.25					18.0			
090300	Tin Bronze	87.50	4.00	.30		8.25				1.0		.20	
093200	SAE 660 Bearing Bronze	83.00	3.00	7.00		7.00							
C95400	Aluminum Bronze (Armco 18™)	83.50			.50			***************************************			1.50		10.50

¹Nominal Composition is listed.

^{*} Items with a single * are suspected carcinogens in humans: see Pages 4 -6 for detailed information.

Health Hazard Information

The below listed ingredients have been determined to be a health hazard at 1% or greater of the composition or in the case of carcinogens (noted with *) at .1% of the composition. See previous pages for chemical analysis of products. Inhalation of dust and/or fume is the primary

CAUTION

DUST FUMES MIST

MAY BE HAZARDOUS TO YOUR HEALTH DURING CERTAIN MANUFACTURING PROCEDURES

WEAR

RESPIRATORS/GLOVES/SAFETY GLASSES
USE ADEQUATE VENTILATION
AS REQUIRED
SEE MSDS FILE FOR SPECIFIC SAFETY

PRECAUTIONS BEFORE HANDLING

INGREDIENTS	CAS NO.	OSHA TWA1	ACGIH TLV-TWA1	ACGIH TLV-STEL1
Aluminum (Al)	7429-90-5	15 Dust/5 Fume	10 Dust/5 Fume	
Aluminum Coating	7429-90-5	15 Dust/5 Fume	10 Dust/5 Fume	
*Antimony (Sb)	7440-36-0	0.5 Dust & Fume	0.5 Dust & Fume	
*Arsenic (As)2	7440-38-2	10 μg Inorganic	0.2 Dust & Fume	
*Beryllium (Be)²	7440-41-7	2 μg Compounds	0.002 Dust & Fume	
Bismuth (Bi)	7440-69-9	Not Established	Not Established	
Boron (B)	7440-42-8	10 Oxide Dust	10 Oxide Fume	
*Cadmium(Cd)3	7440-43-9	0.1 Fume .3 CL	0.05 Dust & Fume	
Carbon (C)	7440-44-0	Not Established	Not Established	
*Chromium (Cr)	7440-47-3	1.0 Chrome Metal	0.5 Chrome Metal & Compounds	
Cobalt(Co)	7440-48-4	0.05 Dust & Fume	0.05 Dust & Fume	
Columbium (Cb)	7440-03-1	Not Established	Not Established	
Copper (Cu)	7440-50-8	1.0 Dust & Mists/0.1 Fume	1.0 Dust & Mists/0.2 Fume	
Iron (Fe)	7439-89-6	10 Oxide Fume	5 Oxide Fume	
*Lead (Pb)²	7439-92-1	50 μg Inorganic	0.15 Dust & Fume	
Magnesium	1309-48-4	10 Total Particulate	10 Oxide Fume	
Manganese (Mn) ³	7439-96-5	1 Fume/5 CL Compounds	5 Dust/1 Fume	3 Fume
Molybdenum (Mo)	7439-98-7	10 Total Dust	10 Insoluble Compounds	1.0 11.11.11
*Nickel (Ni)	7440-02-0	1 Nickel Metal	0.05 Nickel Metal	
Phosphorous (P)	7723-14-0	0.1 Phosphorus	0.1 Phosphorus	
Selenium (Se)	7782-49-2	0.2 Metals & Compounds	0.2 Metals & Compounds	
Silicon (Si)	7440-21-3	10 Total Dust	10 Total Dust	
Silver (Ag)	7440-22-4	0.01 Silver Metal	0.01 Silver Metal	
Sulfur (S)	7704-34-9	5 Sulfur Dioxide	5.2 Sulfur Dioxide Dust/2 Fume	13/5 SO, Dust/Fume
Tantalum(Ta)	7440-25-7	5.0 Metal Dust Oxide	5.0 Metal Dust Oxide	
Tellurium(Te)	13494-80-9	0.1 Tellurium	0.1 Tellurium	
Tin(Sn)	7440-31-5	2 Inorganic Compounds	2 Tin Metal	4 Tin Metal
Titanium(Ti)	7440-32-6	10 Total Dust	10 Titanium Dioxide	
Tungsten(W)	7440-33-7	1 Soluble/5 Insoluble	1 Soluble/5 Insoluble Compounds	
Vanadium (V)	7440-62-2	0.05 Dust & Fume	0.05 Dust & Fume	
Zinc	7440-66-6	10 Oxide Dust	10 Dust/5 Fume	10 Fume
Zirconium (Zr)	7440-67-7	5 Zirconium Compounds	5 Zirconium & Compounds	10 Zirconium

¹Allowable concentrations are expressed in milligrams per cubic meter of air, unless noted

³CL = ceiling limit

Aluminum:

Excessive exposure to aluminum fume and dust has been associated with lung disease, however this effect may be due to simultaneous silica exposure.

may be due to simultaneous silica exposure

*Antimony: May cause irritation to the skin and mucous membranes. Symptoms include metallic taste in the mouth, vomiting, colic, loss of appetite and weight, and diarrhea. In acute poisoning there may be death from circulatory or respiratory failure or toxic hepatitis. A skin/contact dermatitis may result which starts as an inflammation of the

hair follicles and can progress through pus formation and sloughing to leave a contracted scar.

*Arsenic: Excessive exposure to airborne concentrations of inorganic compounds may cause lung cancer. May cause irritation to the skin and mucous membranes. Gastrointestinal, nervous system, kidney and liver disorders have been reported in acute or chronic overexposures. Depression of bone marrow may also occur.

*Items with a single * are suspected carcinogens in humans. See Pages 4-6 for detailed information.

4

²µg = microgram (one millionth of a gram; 10⁶ gram)

Health Hazard Information

*Beryllium:

Airborne particles of beryllium alloys can cause irreversible lung damage and result in an acute or chronic systemic disease called berylliosis. Symptoms include a relatively non-productive cough, progressive difficulty in breathing, fatigue after slight exertion, loss of appetite and weight. The acute form symptoms appear in several hours to several weeks with a usually rapid progression of signs including anorexia, dyspnea, and heart disease. Chronic symptoms are usually delayed in their onset and persistent in nature and can be triggered or aggravated by stresses, such as pregnancy, respiratory infection, and thyrotoxicosis. Granulomatous lesions of the skin, liver, kidneys, spleen and lymph nodes have been reported. Beryllium is also suspected to be a human carcinogen and has caused cancer in laboratory animals.

*Cadmium:

Inhalation of fumes may cause respiratory irritation with a sore, dry throat and a metallic taste followed by a cough, chest pain, and difficulty in breathing. Bronchitis, pneumonitis and pulmonary edema, headaches, dizziness, loss of weight and appetite have also been reported. The liver, kidneys and bone marrow may be injured by the presence of the metal. Continued exposure to lower levels of cadmium may result in irreversible lung and kidney damage. Single high level exposure can cause severe and possibly fatal lung irritation. Cadmium is also a suspected human carcinogen.

*Chromium:

May act as an allergen and cause a dermatitis and/or produce a pulmonary sensitization. Chromic acid and chromates have a direct corrosive effect on the skin and the mucous membranes of the upper respiratory tract. The International Agency for Research on Cancer (IARC) has determined that there is a significant increase in lung cancer. This finding is supported by animal studies.

*Cobalt:

Cobalt has been reported as causing hypersensitization type dermatitis in some individuals. Excessive and prolonged overexposure of cobalt may cause an asthma-like disease with cough and dyspnea.

Copper:

Dust and fumes from melting, grinding and cutting may present a potential health hazard. Fumes may cause a metal fume fever with flu-like symptoms and damage or ulceration of the nasal passages. There may also be skin and hair discoloration. Dermatitis due to sensitization may occur in some individuals.

Iron:

The inhalation of iron oxide fumes or dust may cause an apparent benign pneumoconiosis which is called siderosis. Shortness of breath and coughing are common.

*Lead:

Lead is an accumulative poison. Short term exposure symptoms may include stomach cramps, fatigue, constipation, and decreasing appetite. Inhalation of large amounts of lead may lead to seizures, coma, and death. Long term exposure symptoms are nausea, vomiting, severe anemia, paralysis of the wrist joint and kidney damage. Exposure can result in decreased fertility and/or increased chances of miscarriage or birth defects.

Magnesium:

Heavy exposure to fume may be irritating to eyes, nose and throat and cause metal fume fever.

Manganese:

Manganese poisoning is not fatal although it is extremely disabling. Prolonged exposure can affect the central nervous system. A fever and chills may be typical symptoms.

*Nickel:

Often causes allergic dermatitis know as "nickel itch". Inhalation can cause hypertrophic rhinitis and nasal sinusitis. In extreme cases it is suspected of causing cancer of the nasal cavities, lungs and other organs.

Silicon:

May be responsible for benign pneumoconiosis, but is not considered to be dangerous in the cold state.

Tin:

Tin fume or dust is moderately irritating to the eyes and airways and may cause an apparent benign pneumoconiosis called stannosis which is not disabling.

Zinc:

Even as an oxide, zinc is low in toxicity but inhalation of fumes may cause "metal fume fever". Onset of symptoms may be delayed 4-12 hours and can include irritation of the nose, mouth and throat, cough, stomach pain, headache, nausea, vomiting, metallic taste, chills, fever, pains in the muscles and joints, thirst, bronchitis or pneumonia and a bluish tint to the skin. These symptoms go away in 24-48 hours and leave no lasting effect.

5

*Items with a single * are suspected carcinogens in humans: See Pages 4 -6 for detailed information.

Alloy	Appearance	Specific	Melting	Solubility
Group	& Odor	Gravity	Point	In Water
Aluminum	Silvery Gray/Odorless	2.5-2.9	900° F - 1200° F	Negligible
Copper	Reddish Tone/Odorless	7.45-9.00	1290° F - 2260° F	Insoluble
Copper-Nickel	Silver to Red Brown	8.94	2240° F - 2260° F	Insoluble
Nickel & Nickel Base	Metallic/Odorless	8.00	2600° F - 2800° F	Insoluble
Beryllium Copper	Copper to Brass/Odorless	8.26	1600° F - 1875° F	Insoluble
Brass	Yellow to Gold Odorless	7.45-9.00	1290° F - 2260° F	Insoluble
Bronze	Red Brown to Gold/Odorless	7.45-9.00	1290° F - 2260° F	Insoluble
Stainless Steel	Silvery Gray/Odorless	8.00	2400° F - 2800° F	Insoluble
Carbon Steel	Cloudy Gray/Odorless	8.00	2600° F - 2800° F	Insoluble

Special Precautions and Information

FIRE AND EXPLOSION:

The metal products manufactured and/or distributed by Alaskan are in a stable solid state and in that state pose no threat of fire or explosion. Fires involving fines or chips should be extinguished with dry sand or Class D extinguishers. Halogenated extinguishers should NOT be used. Moisture trapped in molten metal may cause an explosion. Hazardous polymerization will not occur.

SPILL OR LEAK PROCEDURES:

Vacuum if possible, rather than sweep fines, dust and filings. If sweeping is required, use a dust inhibitor. Follow Federal, State and local regulations for disposal. Most metal chips and scrap are fully recyclable.

PERSONNEL PROTECTION:

Local exhaust ventilation should be provided for melting, welding, burning, grinding and cutting operations. If fumes and dust cannot be controlled with exhaust ventilation, an appropriate NIOSH-approved respiratior should be used to prevent excessive inhalation exposure. Gloves and barrier creams may be necessary to prevent skin sensitization and dermatitis and to limit cuts and abrasions. Eye proctection through the use of approved safety glasses or goggles should be worn when working with metal processing and when entering or passing through an area where such processing is being done. Approved ear plugs or ear muffs should be worn where noise levels reach or exceed 90 decibels. Employees involved in the handling of material should wear safety shoes equipped with steel toes.

EMERGENCY AND FIRST AID:

EYES: Immediately flush eyes with water for at least 15 minutes. SKIN: Brush off excess dust and scrub area with soap and water. Metal edges cut easily, care should be taken in handling material. Cuts should be attended to in a common sense manner and medical help should be contacted when serious injuries are sustained. INHALATION: Remove to fresh air, contact medical attention. Wear masks when appropriate. INGESTION: Seek medical help if large quantities have been ingested. Food should not be consumed in the work area.

Abbreviated Glossary of Acronyms and Terms

ACGIH - American Conference of Governmental Industrial	NTP	- National Toxicology Program
Hygienists	PEAK	- 30 Minute Maximum Duration Concentration
CAS - Chemical Abstracts Service Registry Number		Above Ceiling Limit
CEILING - Limit Not To be Exceeded, Except For Peak	PEL	- Permissible Exposure Limit
Limit	STEL	- Short Term Exposure Limit

Limit STEL - Short Term Exposure Limit

EPA - Environmental Protection Agency TLV - Eight hour average threshold limit value

IARC - International Agency for Research on TWA - Time Weighted Limit

NIOSH - National Institute for Occupational Safety and Heath of the Public Health Service, U.S. Department of Health and Human Services (DHHS)

THIS DOCUMENT PREPARED BY ARTHUR GRUNBAUM UNDER THE SUPERVISION OF DOUGLAS ROSEN. FOR INFORMATION CALL (206) 623-5800, ASK FOR MSDS ADMINISTRATOR.

ALASKAN COPPER COMPANIES, INC. P.O. BOX 3546, SEATTLE, WASHINGTON, 98134 UPDATED: AUGUST 1, 1992.

6

ALASK . POST OFFICE BOX 3546
SEATTLE, WASHINGTON 98124

BUL. .ATE U.S. POSTAGE PAID SEATTLE , WASH. PERMIT NO. 74

IMPORTANT INFORMATION

REGARDING HAZARDOUS MATERIALS IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS. DO NOT DELAY! FORWARD TO SAFETY ADMINISTRATOR.



Material Safety Data Sheet

DowElanco Indianapolis, IN 46268 Emergency Phone: 517-636-4400

Product Code: 01662 Page: 1

Product Name: CROSSBOW (R) WEED BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92 MSDS:001715

INGREDIENTS: (% w/w, unless otherwise noted)

2,4-Dichlorophenoxyacetic acid,
butoxyethyl ester
3,5,6-Trichloro-2-pyridinyloxyacetic
acid, butoxyethyl ester
Other ingredients, including:
Kerosene
Proprietary surfactants

CAS# 001929-73-3 34.4%
CAS# 064700-56-7 16.5%
49.1%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: >175C (kerosene)
VAP PRESS: 0.1mm @37.8C (kerosene)
VAP DENSITY: 4.7 (kerosene)
SOL. IN WATER: Forms an emulsion
SP. GRAVITY: 1.013 @ 20C/20C
APPEARANCE: Reddish brown liquid.
ODOR: Sweet odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 148F, 64.4C METHOD USED: Setaflash

FLAMMABLE LIMITS
LFL: Not determined
UFL: Not determined

EXTINGUISHING MEDIA: Water fog, foam, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Noxious fumes under fire conditions. Contain water from fire fighting to prevent entry to water supplies.

FIRE-FIGHTING EQUIPMENT: Use positive pressure self-contained

Drinted on Descripted and Descripted

(Continued on page 2)

DowElanco Indianapolis, IN 46268 Emergency Phone: 517-636-4400

Product Code: 01662 Page: 2

Product Name: CROSSBOW (R) WEED & BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92 MSDS:001715

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Avoid temperatures above or near flash point.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Acid, base and oxidizing materials.

HAZARBOUS DECOMPOSITION PRODUCTS: Noxious fumes, nitrogen oxide, hydrogen chloride and phosgene may result under fire conditions.

HAZARDOUS POLYMERIZATION: Will not occur.

ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Use appropriate safety equipment. Dike large spills. Absorb spills with inert dry material such as sand or sawdust. Do not use water for cleanup.

DISPOSAL METHOD: If wastes cannot be disposed of by use according to label instructions, contact your state pesticide or Environmental Control Agency or the hazardous waste representative at the nearest EPA regional office for guidance.

6. HEALTH HAZARD DATA:

EYE: May cause moderate eye irritation. Corneal injury is unlikely.

SKIN CONTACT: Prolonged exposure may cause skin irritation. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. Repeated skin exposure may result in absorption of harmful amounts. The LD50 for skin absorption in rabbits is >2000 mg/kg.

INGESTION: Single dose oral toxicity is low. The oral LD50 for male rats is 2589 mg/kg and for female rats is 2398 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury, swallowing amounts larger than that may cause injury. If aspirated (liquid

(Continued on page 3)

DowElanco Indianapolis, IN 46268 Emergency Phone: 517-636-4400

Product Code: 01662 Page: 3

Product Name: CROSSBOW (R) WEED & BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92 MSDS:001715

6. HEALTH HAZARD DATA: (CONTINUED)

enters the lung), may cause lung damage or even death due to chemical pneumonia.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract. Signs and symptoms of excessive exposure may be central nervous system effects. The LC50 for male rats is approximately 5 mg/L and >5 mg/L for females.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Excessive exposure may cause liver, kidney, blood, gastrointestinal, muscular and respiratory effects.

CANCER INFORMATION: Triclopyr did not cause cancer in longterm animal studies. Various animal cancer tests have shown no reliably positive association between 2,4-D exposure and cancer. Epidemiology studies on herbicide use have been both positive and negative with the majority being negative. (2,4-D)

TERATOLOGY (BIRTH DEFECTS): Birth defects are unlikely.

Exposures having no effect on the mother should have no effect on the fetus. Bid not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother.

REPRODUCTIVE EFFECTS. In animal studies, triclopyr has been shown not to interfere with reproduction. Excessive dietary levels of 2,4-D caused toxic effects (weight and viability reduction) to the offspring in a rat reproduction study.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Results of in vitro ('test tube') mutagenicity tests have been inconclusive. Results of mutagenicity tests in animals have been inconclusive.

7. FIRST AID:

EYES: Flush immediately with plenty of water. Get medical attention if irritation persists.

SKIN: Wash off in flowing water or shower. Get medical attention if irritation persists.

INGESTION: Bo not induce vomiting. Call a physician or Poison Control Center.

INHALATION: Remove to fresh air if effects occur. Consult a

Continued on page 4)

DowElanco Indianapolis, IN 46268 Emergency Phone: 517-636-4400

Product Code: 01662 Page: 4

Product Name: CROSSBOW (R) WEED & BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92 MSDS:001715

7. FIRST AID: (CONTINUED)

physician.

NOTE TO PHYSICIAN: The decision of whether to induce vomiting or not should be made by an attending physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): 3,5,6-Trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester: the Dow Industrial Hygiene Guide is 2 mg/m3 as the acid equivalent, skin. Kerosene: the Dow Industrial Hygiene Guide is 10 mg/m3. ACGIH TLV and OSHA PEL are 10 mg/m3 for 2,4-D acid.

VENTILATION: Good general ventilation should be sufficient for most conditions.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use impervious gloves when prolonged or frequently repeated contact could occur.

EYE PROTECTION: Use safety glasses. Where contact with this material is likely, chemical goggles are recommended because eye contact may cause discomfort even though it is unlikely to cause injury.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: See label. Keep out of reach of children. Avoid eye or skin contact. Provide eye fountain and washing facilities near work area. Do not store near fertilizer, seeds, insecticides and fungicides. Keep away from open flame.

MSDS STATUS: Sections 6,7,8 and regsheet Revised 8/92

For information regarding state/provincial and federal regulations see the Regulatory Information Section.

(R) Indicates a Trademark Of DowElanco

DowElanco

Indianapolis, IN 46268

Emergency Phone: 517-636-4400

Product Code: 01662

Page: R-1

Product Name: CROSSBOW (R) WEED & BRUSH KILLER

Effective Date: 08/06/92 Date Printed: 08/18/92

MSDS:001715

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented.)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard A delayed health hazard A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

OSHA HAZARD COMMUNICATION STANDARD:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

(R) Indicates a Trademark of DowElanco
The Information Herein Is Given In Good Faith, But No Warranty,
Express Or Implied, Is Made. Consult DowElanco For Further
Information.

MATERIAL SAFETY DATA SHEET

Identity		Date Prepared: 8/7/92
Pebble Quicklime		
Section I		
Ash Grove Cement Compa	ıny	
13939 N. Rivergate Blvd.		
P.O. Box 83007		
Portland, Oregon 97283		
(503)286-1677		
Section II - Hazardous Ing	redients/Identity In	formation
	OSHA PEL	ACGIH TLV
Quicklime, Ca0 (95%)	2mg/M ³	2mg/M³
Section III - Physical/Cher	nical Characteristic	es
Boiling Point	5162°F	Specific Gravity 3.2-3.4
Vapor Pressure (mmHg)		Calcium oxide has no vapor pressure at standard
	737°F	temperature and pressure
Vapor Density (Air=1)	<u> </u>	Evaporation Rate Zero
Solubility in Water 0.54- (
Appearance and Odor	White granu	les or powder; faint carthy odor.
Section IV - Fire and Expl	osion Hazard Data	
Flash Point (method used)		Calcium oxide does not support
combustion		not flammable
Flammable Limits		Calcium oxide is not flammable
		ot explode or cause explosion
	alcium oxide will n	ot explode or cause explosion
Extinguishing Media		Calcium oxide is non-flammable and
Special Fire Fighting Proc	adurae: Call in itaa	non- explosive of is incombustible; in contact with water will
hydrate, evolving heat. Th		*
Unusual Fire and Explosion		None
Oldsdai i lie and Explosie	m mzards.	Hone
Section V - Reactivity Dat	a	
Stability: Unstable X		Conditions to avoid: Contact with water, acids.
To		no moisture present
Incompatibility (Materials	· ·	havis saide kudarasa Ausaide ahasahasas mentavide
-	-	boric oxide, hydrogen fluoride, phosphorus pentoxide
Hazardous Decomposition		ith Interhalogens may cause ignition. None None
	May occur: No	
Polymerization Will not o		Conditions to avoid = 171
C	-1 D-4-	
Section VI - Health Haza	nhalation? X	Skin? X Ingestion? X
Route(s) of entry:	maianon! A	Skint A ingestion: A

Health Hazards (Acute and Chronic) & Emergency First Aid Procedures.

INHALATION: CORROSIVE.

<u>ACUTE EXPOSURE</u> - Inhalation of low concentrations may cause sore throat, coughing, choking, and dyspnea. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.

<u>CHRONIC EXPOSURE</u> - Bronchial irritation with chronic cough and attacks of bronchial pneumonia are possible.

<u>FIRST AID</u> - Remove from exposure to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

SKIN CONTACT: CORROSIVE.

<u>ACUTE EXPOSURE</u>: - The substance penetrates the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.

CHRONIC EXPOSURE - A chronic dermatitis may follow repeated contact.

<u>FIRST AID</u> - Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

EYE CONTACT: CORROSIVE.

<u>ACUTE EXPOSURE</u> - Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction. Blindness may occur.

CHRONIC EXPOSURE - Prolonged contact may cause conjunctivitis.

FIRST AID - Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). A near neutral solution of 0.01 to 0.05 molar sodium EDTA is helpful as an irritant to loosen masses from tissues. Get medical attention immediately. (Grant, toxicology of the eye, volume II). Administration of drugs to the eyes should be performed by qualified medical personnel.

INGESTION: CORROSIVE.

ACUTE EXPOSURE - Ingestion is followed by severe pain, vomiting, diarrhea, and collapse. The vomitus may contain blood and desquamated mucosal lining. If death does not occur in the first 24 hours, the patient may improve for 2-4 days and then have a sudden onset of severe abdominal pain, abdominal rigidity, and rapid hypotension indicating delayed gastric esophageal perforation.

CHRONIC EXPOSURE - None known.

FIRST AID - dilute by giving water or milk to drink immediately and allow vomiting to occur. As soon as possible, examine mouth and throat and irrigate injured areas with 1% acetic acid until alkali is completely neutralized. Avoid gastric lavage or emetics. These may increase the possibility of perforation. (Dreisbach, handbook of poisoning, 11th ed.). Administration of drugs or antidote should be performed by qualified medical personnel.

Carcinogenicity: NA OSHA Regulated? Yes	NTP:	NA	IARC Monograph? TLV of 2mg/M³	NA		
Medical Conditions Generally Aggravated by Exposure: NA						

Section VII - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled:

SPILL AND LEAK PROCEDURES

SOIL SPILL:

Dig holding area such as lagoon, pond or pit for containment.

Use protective cover such as a plastic sheet to prevent material from dissolving in fire extinguishing water or rain.

WATER SPILL:

Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.

Use activated carbon to absorb spilled substance that is dissolved. Use suction hoses to remove trapped spill material.

OCCUPATIONAL SPILL:

Do not touch spilled material. Stop leak if you can do it without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, with shovel place material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal.

WASTE DISPOSAL METHOD

- 1. May be used to neutralize acid wastes
- 2. May be used agriculturally
- 3. Controlled discharge into sewers with sewage plant's approval

Precautions to be Taken in Handling and Storing

<u>Handling:</u> Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

Section VIII - Control Measures

Respiratory Protection (Specify Type):

RESPIRATOR:

25 MG/M3 - Dust and Mist Respiratory

50 MG/M³- Dust and Mist Respirator (Except Single - Use and Quarter - Mask Respirators.)

Fume or High - Efficiency Particulate Respirator.

Supplied - Air Respirator.

Self - contained Breathing Apparatus.

250 MG/M³-High-Efficiency Particulate Respirator with a Full Facepiece.

Supplied-Air Respirator with a Full Facepiece, Helmet, or Hood.

Self-Contained breathing apparatus with a full Facepiece.

Escape - High-Efficiency Particulate Respirator with a Full Facepiece. Self-

Contained Breathing Apparatus.

Fire fighting - Self-Contained Breathing Apparatus with a Full Facepiece Operated in Pressure-Demand or Positive-Pressure Mode.

VENTILATION:

Process enclosure or local exhaust ventilation,

Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet Type Work Gloves

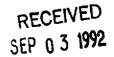
Eye Protection: Tight fitting Goggles

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed

skin areas.

Work/Hygienic Practices:

Immediately after working with Quicklime, workers should shower with soap and water.



Page



Material Safety Data Sheet

CHEVRON Diesel Fuel No. 2

CPS272102

1 of 7

PRIESTLEY OIL & CHEMICAL 3746534 CO., INC. P O BOX 12570 PORTLAND, OR 97212

MATERIAL ORDERED FOR: BULK LUBE OIL PICK-UP WB FOB WILLBRIDGE PORTLAND, OR 97210

Frint Date: September 01, 1992 This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised for indexing purposes only. No changes have been made in this MSDS.

1. PRODUCT IDENTIFICATION

CHEVRON Diesel Fuel No. 2

- DANGER! COMBUSTIBLE
 - HARMFUL OR FATAL IF SWALLOWED CAN ENTER LUNGS AND CAUSE DAMAGE
 - CAUSES SKIN IRRITATION
 - CANCER HAZARD
 - PROLONGED OR REPEATED SKIN CONTACT MAY INCREASE THE RISK OF SKIN CANCER
 - KEEP OUT OF REACH OF CHILDREN

PRODUCT NUMBER(S): CPS272102

PRODUCT INFORMATION: (510)242-5357

MSDS Number: 000525 Revision Number: 12 Revision Date: 01/03/92 NDA - No Data Available NA - Not Applicable

X-008051 (08-39) Appendix33-001088

Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

Remove contaminated clothing. Wash skin thoroughly with soap and water. See a doctor if any signs or symptoms described in this document occur. Discard contaminated non-waterproof shoes and boots. Wash contaminated clothing.

INHALATION:

If any signs or symptoms as described in this document occur, move the person to fresh air. If any of these effects continue, see a doctor.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital. Note to Physician: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation.

SKIN IRRITATION:

This substance is a moderate skin irritant so contact with the skin could cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. Signs and symptoms may include pain or a feeling of heat, discoloration, swelling, and blistering. Read the Additional Health Data section (12) of this document for more information.

DERMAL TOXICITY:

If absorbed through the skin, this substance is considered practically non-toxic to internal organs.

RESPIRATORY/INHALATION:

Prolonged breathing of vapors can cause central nervous system effects. Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. This hazard evaluation is based on data from similar materials.

INGESTION:

If swallowed, this substance is considered practically non-toxic to internal organs. Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000525

substance. Once \cdot in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

Avoid contact with skin or clothing. Skin contact should be minimized by wearing protective clothing including gloves.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use this material only in well ventilated areas.

5. FIRE PROTECTION

FLASH POINT: (P-M) 125F (52C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: 0.6 Upper: 4.7

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 2; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above 85 F.

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire document.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000525 NDA - No Data Available NA - Not Applicable

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

WARNING! Not for use as portable heater or appliance fuel. Toxic fumes may accumulate and cause death.

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Pale yellow liquid.

BOILING POINT: 176 - 370C (348-698F)

MELTING POINT: NA EVAPORATION: NDA

SPECIFIC GRAVITY: 0.84 @ 15.6/15.6C (Typical)

VAPOR PRESSURE: 0.04 PSIA @ 40C PERCENT VOLATILE (VOLUME %): NDA

VAPOR DENSITY (AIR=1): NDA

VISCOSITY: 1.9 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour).

SPILL/LEAK PRECAUTIONS:

Eliminate all sources of ignition in vicinity of spill or released vapor.

Clean up spills immediately, observing precautions in Protective Equipment section. This material is considered to be a water pollutant and releases of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems.

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000525

U.S.A. regulations require reporting spills of this material that could reach any surface waters. The toll free number for the U.S. Coast Guard National Response Center is (800) 424-8802.

DISPOSAL METHODS:

Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Diesel Fuel No. 2

CONTAINING

100.0 % FUELS, DIESEL, NC. 2

CAS68476346

DISTILLATES, HYDRODESULFURIZED MIDDLE

CAS64742809

DISTILLATES, STRAIGHT RUN MIDDLE

CAS64741442

KEROSINE

CAS8008206

KEROSINE, HYDRODESULFURIZED

CAS64742810

DISTILLATES, LIGHT CATALYTIC CRACKED

CAS64741599

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000525 NDA - No Data Available NA - Not Applicable

10. REGULATORY INFORMATION

DOT basic descriptions can vary based on package quantity and may not coincide with international description requirements. Consult the Hazardous Materials Regulations in 49CFR and the appropriate Dangerous Goods Regulations to confirm description applicability to specific shipments.

DOT SHIPPING NAME: FUEL OIL, NO. 2 DOT HAZARD CLASS: COMBUSTIBLE LIQUID DOT IDENTIFICATION NUMBER: NA1993

SARA 311 CATEGORIES:

- 1. Immediate (Acute) Health Effects; YES
 2. Dolayed (Chronic) Health Effects, YES
- Delayed (Chronic) Health Effects; YES
 Fire Hazard; YES
- 4. Sudden Release of Pressure Hazard; NO
- 5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

KEROSINE

is found on lists: 02,10,11,

REGULATORY LISTS SEARCHED:

Ol=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	ll=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

29=OSHA CEILING

Minimal effects clearing in less than 24 hours.

SKIN IRRITATION:

Moderate irritation at 72 hours. (Moderate erythema).

DERMAL TOXICITY:

The dermal LD50 in rabbits is > 5 ml/kg.

RESPIRATORY/INHALATION:

The 4-hour inhalation LC50 in rats is greater than 5 mg/l.

INGESTION:

The oral LD50 in rats is > 5 ml/kg.

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000525 NDA - No Data Available NA - Not Applicable ADDITIONAL TOXICOLOGY DATA:

The data above is obtained from studies sponsored by the American Petroleum Institute (API).

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains a mixture of petroleum hydrocarbons called middle distillates (which means they boil between approximately 350F and 700F). Because of this broad description, many products are considered middle distillates yet they are produced by a variety of different petroleum refining processes. Toxicology data developed on some middle distillates found that they caused positive responses in some mutagenicity tests and caused skin cancer when repeatedly applied to mice over their lifetime. This product may contain some middle distillates found to cause those adverse effects.

Whole diesel engine exhaust was reviewed by the International Agency for Research on Cancer (IARC) in their Monograph 46 (1989). Evidence for causing cancer was considered sufficient in animals and limited in humans. IARC placed diesel exhaust in category 2A, considering it probably carcinogenic to humans.

The National Institute of Occupational Safety and Health (NIOSH) has recommended that whole diesel exhaust be regarded as potentially causing cancer. This recommendation was based on test results showing increased lung cancer in laboratory animals exposed to whole diesel exhaust. The excess risk of cancer for people exposed to diesel exhaust has not been determined as studies on exposed workers have been inconclusive. It is recommended that exposure to diesel exhaust be minimized to reduce the potential cancer risk.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 12 Revision Date: 01/03/92 MSDS Number: 000525

05-02-005

MATERIAL SAFETY DATA SHEET

MANUFACTURER'S NAME: Priestley Oil & Chemical Co.

ADDRESS: 2429 North Borthwick P.O. Box 12570

Portland, OR 97212

HMIS INFORMATION

HEALTH

FLAMMABILITY 2 REACTION

Ø PROTECTION

Emergency Telephone: (503) 288-5294

DATE REVISED: 10/1/92

SECTION I -- PRODUCT IDENTIFICATION

PRODUCT NUMBER:

9365

Prepared by: Chris Jansen

PRODUCT NAME:

SOLUENT SES

CHEMICAL NAME:

HYDROCARBON MIXTURE

CHEMICAL FORMULA:

Not applicable; product is a mixture.

DOT CLASSIFICATION: COMBUSTIBLE LIQUID UN 1255

SECTION II -- HAZARDOUS INGREDIENTS

CHEMICAL, COMMON NAME

CAS NO. OSHA PEL ACGIH TLV WT %

Hydrotrested Heavy Naphthal

64742-48-9 100 ppm

1ម៉ូម៉ូ ខ្ទួតា

1 \odot \odot

The components of this product are listed on the EPA/TSCA inventory of chemical substances. * Indicates a reportable toxic chemical under SARA Title III Section Big

SECTION III -- PHYSICAL CHARACTERISTICS

BOILING POINT: 315-380 F

SPECIFIC GRAVITY: .791-.919

UAPOR PRESSURE: 2.9

mm @ 20 C

* UOLATILE BY VOLUME: 100%

VAPOR DENSITY: HEAVIER THAN AIR.

EVAPORATION RATE: SLOWER THAN ETHER

SOLUBILITY(SPECIFY SOLUENTS):

Solubla in most Ketones and Hydrocarbons; completely insoluble in water.

APPEARANCE AND ODOR:

Clear, water-white liquid with characteristic odor.

SECTION IV -- FIRE & EXPLOSION DATA

FLASH POINT: 104 DEG F | ESTIMATED EXPLOSIVE LIMIT RANGE IS: LEL: 1, 0 | UEL: 6, 0

EXTINGUIGHING MEDIA:

ំខុខភាន ខុខ១៦០០ ចៀលអង់ជាខ្មែរ ថ្នាំមួយកំណាងនៅព្រ

SPECIAL FIREFIGHTING PROCEDURES

The use of SCBA is recommended for firefighters. Water spray may be used ta cost containers exposed to heat or tlame.

SOLUENT 365

REACTIVITY: Product is stable.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AUGID:

his product is incompatible with strong acids or bases, oxidizers, alkali metals, and halogens.

HAZARDOUS DECOMPOSITION PRODUCTS:

Thermal decomposition may yield carbon monoxide and carbon dioxide.

SECTION U -- HEALTH HAZARD DATA

ACUTE HEALTH EFFECTS:

EYE CONTACT: Material is a severe eye irritant. Direct contact with the liquid or exposure to vapors or mists may cause stinging, tearing, redness, swelling and eye damage.

INHALATION: Breathing high concentrations of vapors or mists may cause irritation of the mose or throat and signs of nervous system depression.

INGESTION: Ingestion of excessive quantities may cause irritation of the digestive tract, and signs of nervous system depression(headache, drowsiness, dizziness, loss of coordination, and fatigue).

SKIN CONTACT: This material is a skin irritant. Direct contact may cause redness or burning, drying and cracking of the skin.

FMERGENCY FIRST AID PROCEDURES: (E CONTACT: Flush with clean water for at least fifteen minutes. If irritation persists, get medical attention.

INHALATION: Move individual to fresh air. If breathing has stopped, apply artificial respiration. Get medical attention.

INSESTION: DO NOT INDUCE CONITING or give anything by mouth becase this material can enter the lungs and cause severe lung damage. If victim is unconscious, place on the left side with the head down. Get medical attention immediately.

SKIN CONTACT: Wash affected area with soap and water. If irritation persists, get medical attention.

CHRONIC HEALTH EFFECTS:

Laboratory studies have shown that petroleum distillates may cause kidney, liver, or lung damage. Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage. Not listed as a carcinogen by the NTP, IARC, or OSHA.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Existing lung or skin conditions may be aggravated by repeated exposure.

SECTION UI -- SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS SPILLED OR RELEASED:

Remove all sources of ignition and provide wentilation. Soak up spill with absorbent material.

SOLVENT 365

** ** **

WASTE DISPOSAL METHOD: Incinerate or dispose of waste material in accordance with all local, state, and federal requirements.

SECTION VII -- SPECIAL PROTECTION DATA

RESPIRATORY PROTECTION:

Mean NIUSH-approved respirator when the airborne concentration of this product exceeds the Threshold Limit Value (TLU).

UENTILATION:

Provide exhaust ventilation sufficient to keep the airborne concentration of this product below its exposure limits. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

PROTECTIVE GLOVES:

Neoprene or rubber if prolonged skin contact is likely.

EYE PROTECTION:

Goggles or full face shield if eye contact is likely.

SECTION VIII -- STORAGE & HANDLING DATA

RECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

atore away from heat, sparks, and open flame. Keep containers tightly closed when not in use. Ground and bond all equipment when transferring from one container to another. Do not weld, cut, grind, solder, or drill on or near empty containers. Empty containers may contain explosive concentrations of product vapors.

OTHER PRECAUTIONS:

Product emits vapors which are heavier than air and may travel long distances. KEEP OUT OF REACH OF CHILDREN.

Use good personal hygiene when handling this product. Nash hands after use, before smoking, eating, or using the toilet.

UNUSUAL FIRE AND EXPLOSION DATA

When heated above the flash point, this material emits flammable vapors which, when mixed with air, can burn or be explosive. Fine mists or sprays may be flammable at temperatures below the flash point.

THIS MEDS HEETS THE REQUIREMENTS OF OFR 1910,1200 OSHA HAZARD COMMUNICATION STANDARD.

THE INFORMATION CONTAINED HEREIN IS BASED ON THE ONTA AVAILABLE TO US AND IS BELIEVED TO BE ACCUPATE, HOVEVER, PRIESTLEY OIL ACHEMICAL MAKES NO VARRANTY, EXPRESSED ON IMPLIED, REGARDING THE ACCURATOR OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEROF, PRIESTLY OIL A CHEMICAL ASSUMES NO RESPONSIBILITY FOR INJURY FROM THE USE OF THE PRODUCT DESCRIBED HEREIN.



ZEP MANUFACTURING COMPANY P.O. BOX 2015 ATLANTA, GEORGIA 30301

ASHGROVE CEMENT WEST INC (366) 13939 N RIVERGATE BLVD PORTLAND, OR 97203

MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

12/21/96

ISSUE DATE: 10/30/92 SUPERSEDES: 04/23/90

ZEP SPIRIT

PRODUCT NG: 0676

Cleaner - Disinfectant - Deodoran

SECTION I - EMERGENCY CONTACTS

TELEPHONE:

(404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(770) 439-4200 (770) 432-2873

NON-OFFICE HOURS, WEEKENDS AND HOLIDAYS, PLEASE CALL YO LOCAL POISON CONTROL

(770) 432-2673 (770) 424-4789 (770) 392-1480 (770) 455-8160 (770) 552-8836

TRANSPORTATION EMERGENCY:

(770) 922-0923 CHEMTREC:

TOLL-FREE - ALL CALLS RECORDED

1-800-424-9300 DISTRICT OF COLUMBIA: (202) 483-7616

ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

** ETHYLENE GLYCOL MONOBUTYL ETHER ** 2-butoxyethanol; butyl cellosolve; CAS # 111-76-2; RTECS # KJ8575000; OSHA PEL (SKIN)- 25 ppm

(PPM) 25

EFFECTS (SEE REVERSE) TOX IRR CBL

PROD.

@ Identifies chemicals listed under SARA-Section 313 for release reporting

SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

This product, particularly in its concentrated form, may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. inflammation is characterized by itching, scaling, reddening, or blistering. Overexposure by inhalation may cause respiratory irritation. Exposure may aggravate existing skin disorders such as dermatitis.

Chronic Effects of Overexposure:

Repeated or prolonged skin contact may produce chronic inflammation or dermatitis, characterized by redness, scaling or itching. Animal studies indicate a potential for er, kidney, or red blood cell damage. Relevance of these studies or exposure levels which might produce these effects in humans has not been established. None of the zardous ingredients are listed as carcinogens by IARC, NTP, & OSHA

≤st'd PEL/TLV: Not established

Primary Routes of Entry: Inh, Skin.

HMIS Codes: HEALTH 2;FLAM. 0;REACT. 0;PERS. PROTECT. B ;CHRONIC HAZ. YES

FIRST AID PROCEDURES:

Skin: Flush contaminated skin with plenty of water. Consult a physician if irritation develops

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once. Inhale: Move exposed person to fresh air. If irritation persists, get medical attention promptly.

Ingest: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothing:

Wear nitrile gloves or use gloves with demonstrated resistance to the ingredients in this product.

Eye Protection:

Wear splash-proof safety googles especially if contact lenses are worn. No extra measures are needed if ventilation is adequate.

Respiratory Protection:

Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

Ventilation:

Boiling Point (*F)

~ 220 Percent Volatile by Volume (%): Solubility in Water: ~ 93

Specific Gravity:

Vapor Pressure (mmHg): Evaporation Rate (WATER = 1): pH (use dilution of):

N/A 1.0 N/A

MIŞÇIBLE

Vapor Density (air = 1): N/A pH (concentrate): 9.0-

Appearance and Odor: CLEAR, GREEN LIQUID WITH A VERY PLEASANT ODOR

SECTION VI - FIRE AND EXPLOSION DATA

9.0-9.5

SECTION V - PHYSICAL DATA

Flash Point (*F) (method used): None (TCC) Flammable Limits: LEL N/A UEI

Extinguishing Media: Special Fire Fighting:

LEL N/A UEL N/A Noncombustible.

Unusual Fire Hazards:

Fire exposed drums should be cooled with stream of water. Wear self-contained positive pres. breathing apparatus.

SECTION VII - REACTIVITY DATA

Stability: Incompatibility (avoid): Polymerization:

Hazardous Decomposition:

Stable

Heat, sunlight, strong oxidizers, and acids.

Will not occur.

Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on inert absorbent material (eg Zep-O-Zorb). Pick up and place residue in a suitable waste container or, if permitted, flush to sewer. Thoroughly rinse spill area with water. Waste Disposal Method:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg. Zep-O-Zorb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA Hazardous Waste Numbers: N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps, between 40-120 degrees F. Keep product away from skin and eyes. Do not breathe spray mists or vapors. Clothing or shoes which become contaminated with substance should be removed promptly and not rewarn until thoroughly cleaned. Keep out of the reach of children

SECTION X - TRANSPORTATION DATA

DOT Label/Placard: NONE

DOT PROPER SHIPPING NAME Small sizes one gallon or less may be shipped as ORM-D: NONE

DOT Hazard Class: N/A

DOT I.D. Number: N/A

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container) : NONE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equip ment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

TERMS AND ADBREVIATIONS USED IN THE MSDS: BY SECTION ALPHABETICALLY:

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen • A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.
CAS #; Chemical Abstract Services Registry Number - A

universally accepted numbering system for chemical sub-

CBL: Combustible - At temperatures between 100°F and 200% chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS; Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive - Causes irreversible alterations in living

tissue (e.g. burns).

DESIGNATIONS; Chemical and common names of hazardous

EIR: Eve Irritant Only - Causes reversible reddening and/or

inflammation of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) air-

borne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling ACGIH: American Conference of Governmental Industrial

Hygienists.

CEIUNG: The concentration that should not be exceeded

on the workplace during any part of the working exposure.

OSHA: Occupational Safety and Health Administration

PEL Permissible Exposure Limit- A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM: Parts per million - unit of measure for exposure

(S) SKIN: Skin contact with substance can contribute to overall exposure

STEL: Short Term Exposure Limit- Maximum concentration

for a continuous 15-minute exposure period.

TLV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBL: Flammable - At temperatures under 100°F, chemical

NOTICE

gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester. HAZARDOUS INGREDIENTS: Chemical substances determined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX; Highly toxic - the probable lethal dose for 70 kg (150 lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

IRR; Irritant - Causes reversible effects in living tissues (e.g.

inflammation) - primarily skin and eyes.

N/A; Not Applicable - Category is not appropriate for this

product.
N/D: Not Determined - Insufficient information for a deter-

mination for this item.

RTECS#; Registry of Toxic Effects of Chemical Substances
- an unreviewed listing of published toxicology data on

SARA: Superfund Amendments and Reauthorization Act Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN; Sensitizer - Causes allergic reaction after repeated

exposure.
TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.)

man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

SECTION III: HEALTH HAZARD DATA
ACUTE EFFECT; An adverse effect on the human body from
a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.
CHRONIC EFFECT; Adverse effects that are most likely to

occur from repeated exposure over a long period of time. EST'D PEUTLV; This estimated, time-weighted average, posure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for provid-

ing safe workplace conditions to nearly all workers.

HMIS CODES; Hazardous Material Identification System rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective

equipment.
PRIMARY ROUTE OF ENTRY: The way one or more haz-

ardous ingredients may enter the body and cause a generalized-systemic or specific-organ toxic effect.

ING: ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through breathing of vapors.

SKIN: A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks. MSHA Mine Safety and Health Administration

NIOSH; National Institute for Occupational Safety and Health.

SECTION V: PHYSICAL DATA

EVAPORATION RATE; it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water). pH: A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline

aqueous solution (Abdulo pri - 1, Read of the product (liquid or solid) that will evaporate at 212°F and ambient pressure.

SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION: Breakdown products expered to be produced upon product decomposition or fire.

INCOMPATIBILITY: Material contact and conditions to avoid

to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing ex cess pressure and heat.

STABILITY; Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES

ACRA WASTE NOS; RCRA (Resource Conservation and Re-covery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original

SECTION X: TRANSPORTATION DATA

CWA; Clean Water Act

AQ; Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies. TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests of data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zeo assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Salety Data Sheet.

(Notice Revised 8/91)

Emergency Number (800)457-2022 or (510)233-3737



Material Safety Data Sheet

CHEVRON Hydraulic Oil AW ISO 46

CPS255674

Page 1 of 7

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting PRIESTLEY OIL & CHEMICAL 3746534 MATERIAL ORDERED FOR:

CC., INC. BULK LUBE OIL PICK-UP WE FOR WILLERIDGE FORTLAND, OR 97212 PORTLAND, OR 97210

Print Date: October 08, 1992

1. PRODUCT IDENTIFICATION

CHEVRON Hydraulic Oil AW ISO 46

PRODUCT NUMBER(S): CPS255674

PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID MEASURES

EMERGENCY NUMBER (24 hr): (800)457-2022 or (510)233-3737 (International) EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Note to Physician: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

INHALATION

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This substance may be irritating if inhaled. Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing. This hazard evaluation is based on data from similar materials.

INGESTION:

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PIGHTING MEASURES

SPECIAL NOTES: Leaks/ruptures in high pressure systems using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

FLASH POINT: (COC) >392F (200C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur and phosphorus. Incomplete combustion can produce carbon monoxide.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

7. PHYSICAL AND CHEMICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Pale yellow liquid.

BOILING POINT: NA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 41.4 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616 SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Hydraulic Oil AW ISO 46

CONTAINING

> 99.0 % LUBRICATING BASE OIL
5 mg/m3 mist ACGIH TWA
10 mg/m3 mist ACGIH STEL
5 mg/m3 mist OSHA TWA

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

< 1.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

Immediate (Acute) Health Effects: NO

2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard:

NO NO

4. Sudden Release of Pressure Hazard: NO

5. Reactivity Hazard:

NO

REGULATORY LISTS SEARCHED:

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TWA	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TWA	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING	30=Chevron STEL	

The following components of this material are found on the regulatory lists indicated.

LUBRICATING BASE OIL

is found on lists: 14,15,17,

11. TOXICOLOGICAL INFORMATION

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614



Material Safety Data Sheet

CHEVRON ATF DEXRON

CPS226502

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3746534 CO., INC. P O BOX 12570 PORTLAND, OR 97212 MATERIAL ORDERED FOR: BULK LUBE OIL PICK-UP WB FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: October 13, 1992
This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to reflect name change from "CHEVRON Automatic Transmission Fluid (DEXRON)" to "CHEVRON ATF DEXRON".

1. PRODUCT IDENTIFICATION

CHEVRON ATF DEXRON

PRODUCT NUMBER(S): CPS226502

PRODUCT INFORMATION: (800)582-3835

Revision Number: 18 Revision Date: 02/08/92 MSDS Number: 000021 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 18 Revision Date: 02/08/92 MSDS Number: 000021

NDA - No Data Available NA - Not Applicable

(

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 160C (320F) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Alcohol Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

Revision Number: 18 Revision Date: 02/08/92 MSDS Number: 000021

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Red liquid.
BOILING POINT: NDA
MELTING POINT: NA

EVAPORATION: NA

SPECIFIC GRAVITY: 0.89 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA VISCOSITY: 35.3 cst @ 40c

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Protective Equipment. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 18 Revision Date: 02/08/92 MSDS Number: 000021

100.0 % CHEVRON ATF DEXRON

CONTAINING

> 85.0 % LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING

DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC

CAS64742525 5 mg/m3 mist ACGIH TLV

> 10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

DISTILLATES, HYDROTREATED LIGHT NAPHTHENIC

CAS64742536 5mg/m3 mist ACGIH TLV

> 10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547 5mg/3 mist ACGIH TLV

> 10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

CAS64742650 5 mg/m3 mist ACGIH TLV

> 10 mg/m3 mist ACGIH STEL 5 mg/m3 mist OSHA TWA

< 15.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code CC - Chevron Chemical Company CAS - Chemical Abstract CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1.

Immediate (Acute) Health Effects; NO

Delayed (Chronic) Health Effects; NO 2.

Fire Hazard: NO

4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO 5.

The following components of this material are found on the regulatory lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC is found on lists: 14,15,17, DISTILLATES, HYDROTREATED LIGHT NAPHTHENIC

Revision Date: 02/08/92 MSDS Number: 000021 Revision Number: 18

> NA - Not Applicable NDA - No Data Available

is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

is found on lists: 14,15,17,

REGULATORY LISTS SEARCHED:

01=SARA 313 02=MASS RTK 03=NTP Carcinogen 04=CA Prop. 65 05=MI 406 06=IARC Group 1 07=IARC Group 2A 08=IARC Group 2B 09=SARA 302/304 10=PA RTK ll=NJ RTK 12=CERCLA 302.4 13=MN RTK 14=ACGIH TLV 15=ACGIH STEL 16=ACGIH Calculated TLV 17=OSHA TWA 18=OSHA STEL 19=Chevron TLV 20=EPA Carcinogen 21=TSCA Sect 4(e) 22=TSCA Sect 5(a)(e)(f) 23=TSCA Sect 6 24=TSCA Sect 12(b) 25=TSCA Sect 8(a) 26=TSCA Sect 8(d) 28=Canadian WHMIS 29=OSHA CEILING

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

Revision Number: 18 Revision Date: 02/08/92 MSDS Number: 000021

NDA - No Data Available NA - Not Applicable

í

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 18 Revision Date: 02/08/92 MSDS Number: 000021

MONSANTO MATERIAL SAFETY DATA

MONSANTO PRODUCT NAME ROUNDUP® HERBICIDE

MONSANTO COMPANY
800 N. LINDBERGH
ST. LOUIS, MO 63167
EMERGENCY PH. NO. (CALL COLLECT) (314) 694-4000
DATE PREPARED: November 1992

Property to the

or Maria erro Orangeria

PRODUCT IDENTIFICATION

EPA Registration Number:

524-445

Synonyms:

None

Chemical Name:

Not Applicable, Formulated Product

Active Ingredient:

Inert Ingredients:

59.0%

ARM OF SHIP REPORTED THE PARTY.

and the second profession in

*Contains 480 grams per liter or 4 pounds per gallon of the active ingredient glyphosate in the form of its isopropylamine sait. Equivalent to 356 grams per liter or 3 pounds per U.S. gallor of the acid. glyphosate.

was in it if which

"Jose Sentanos (m. 1981)

CAS Reg. No.:

Not Applicable, Formulated Product

CAS Reg. No. Active Ingredient;

1071-83-6

DOT Proper Shipping Name:

Not Applicable

DOT Hazard Class/I.D. No.:

Not Applicable

DOT Label:

Not Applicable

Reportable Quantity (RQ) Under CERCLA:

Not Applicable

U.S. Surface Freight Classification:

Weed killing compound, N.O.I.B.N. 第四本

SARA Hazard Notification

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): Immediate

Section 313 Toxic Chemical(s): Not Applicable

Hazardous Chemical(s) Under OSHA Hazar Communication Standard:

This product contains, as components, the substances listed below which are identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR §1910.1200):

Ethoxylated Tallowamines, CAS Reg. No. 61791-26-2

WARNING STATEMENTS

Keep out of reach of children.
WARNING!
CAUSES SUBSTANTIAL BUT TEMPORARY EYE INJURY
HARMFUL IF INHALED,
REFORMULATION IS PROHIBITED
SEE INDIVIDUAL CONTAINER LABEL FOR REPACKAGING LIMITATIONS

PRECAUTIONARY MEASURES

- Do not get in eyes or breathe spray mist or get in or on clothing.
- Wear goggles, face shield or safety glasses.
- Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.
- Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water
 mark,
- Do not contaminate water when disposing of equipment washwaters.

EMERGENCY AND FIRST AID PROCEDURES

FIRST AID:

If In Eyes:

Hold eyelids open and flush with plenty of water. Get medical attention.

If Swallowed:

Drink promptly a large quantity of milk, egg whites, or gelatin solution. If these are not available,

drink large quantities of water. Get medical attention.

If Inhaled:

Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth,

Get medical attention.

NOTE:

For additional human emergency first aid or treatment guidance, call collect, anytime, day or night

(314) 694-4000.

OCCUPATIONAL CONTROL PROCEDURES

Eye Protection:

Wear chemical splash goggles during mixing/pouring operations or other activities in which eye

contact with undiluted ROUNDUP® herbicide is likely to occur.

Skin Protection:

ROUNDUP® herbicide does not present significant skin concern requiring special protection.

Respiratory Protection:

For Handling of the Undiluted Product: Undiluted ROUNDUP® herbicide is not likely to present an airborne exposure concern during normal handling. In the event of an accidental discharge of the material during manufacture or handling which produces a heavy vapor or mist, workers should put on respiratory protection equipment. Consult respirator manufacturer to determine appropriate

type of equipment. Observe respirator use limitations specified by NIOSH/MSHA or the

manufacturer.

For Application of Product Diluted in accordance with label instructions: Respirators are not

required for applications of use - dilutions of ROUNDUP* herbicide.

Ventilation:

No special precautions are recommended.

Airborne Exposure Limits:

Product:

ROUNDUP® herbicide - 100% by wt.:

OSHA PEL: None established A

ACGIH TLV: None established

Ethoxylated Tallowamine:

OSHA PEL: None established

ACGIH TLV: None established

FIRE PROTECTION INFORMATION

Flash Point:

>200°F

Method: Pensky-Martens

Extinguishing Media:

Water spray, foam, dry chemical, CO2, or any class B extinguishing agent.

Special Firefighting Procedures:

Firefighters or others who may be exposed to vapors, mists or products of

combustion should wear a self-contained breathing apparatus. Equipment

should be thoroughly cleaned after use.

Unusual Fire and Explosion Hazards:

None

REACTIVITY DATA

Stability:

Stable for at least 5 years under normal conditions of warehouse storage.

Incompatibility:

Spray solutions of this product should be mixed, stored or applied using only stainless

steel, aluminum, fiberglass, plastic or plastic-lined containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

Hazardous Decomposition

Products:

None

Hazardous Polymerization:

Does not occur. This product can react with caustic (basic) materials to liberate heat. This is not a polymerization but rather a chemical neutralization in an acid base reaction.

HEALTH EFFECTS SUMMARY

The following information summarizes human experience and results of scientific investigations reviewed by health. professionals for hazard evaluation of ROUNDUPe herbicide and development of Precautionary Statements and Occupational Control Procedures recommended in this document.

EFFECTS OF EXPOSURE

Skin contact and inhalation are expected to be the primary routes of occupational exposure to ROUNDUPe harbicide. Although limited occupational exposure to this material has not been reported to produce significant adverse thealth effects, ROUNDUPe herbicide is considered, on the basis of single exposure (acute) animal tests to be stocker to moderately irritating to eyes. Ingestion of similar formulations has been reported to produce gastroirsestinal discomfort with irritation of the mouth, nausea, vomiting and diarrhea. Oral ingestion of large quantities of one similar product has been reported to result in hypotension and lung edema.

TOXICOLOGICAL DATA

Data from laboratory studies conducted by Monsanto with ROUNDUP® herbicide are summarized below:

Single exposure (acute) studies indicate:

Oral -

Practically non-toxic, (Rat LD₅₀, >5,000 mg/Kg)

Dermai -

Practically non-toxic, (Rabbit LD₅₀, >5000 mg/Kg)

Inhalation -

Slightly toxic, (Rat 4-hr LC₅₀, - 2.6 mg/L)

Eye Irritation -

Slightly to moderately irritating, (Rabbit)

Skin Irritation -

Essentially non-irritating (Rabbit, 4 hr. exposure)

No skin altergy was observed in guinea pigs following repeated skin exposure.

COMPONENTS

Data from laboratory studies conducted by Monsanto and from the scientific literature on components of ROUNDUP herbicide:

Isopropylamine Sait of Glyphosete

Data from studies with a formulation comprised of 62% isopropylamine salt of glyphosate (MON 0139) inclicate the following:

In repeat dosing studies (6-month), dogs fed MON 0139 exhibited slight body weight changes. Following repeated skin exposure (3-week) to MON 0139, skin irritation was the primary effect in rabbits.

Additional toxicity information is available on glyphosate, the active herbicidal ingredient of MON 0139. Ectionists repeated exposures (90-days) to glyphosate in their feed, decreased weight gains were noted at the highest test level in mice, while no treatment-related effects occurred in rats. Following repeated skin exposure (3 week the primary effect observed in rabbite. No skin ellergy was closed to a repeated skin exposure. There was no evidence of effects on the nervous system, including delay (repeat oral doses) or cholinesterase infebition in rest (apple oral doses). Reduced body weight tissues were observed with long-term (2-year) feeding on phyphosate to mice it high-dose agents. gain and eye changes were observed at the high dose level in one long-term (2 year) feeding study with rate. treatment-related effects occurred in a second study. No adverse effects were observed in feeding and Glyphosate did not produce tumors in any of these studies. Based on the results from the children classified glyphosate in category E (evidence of non-carcinogenicity for numeral) No bide rats and rabbits given glyphosate orally during pregnancy, even at amounts which preduced adverse eff mothers. Glyphosate was fed continuously to rats at very high close levels for 2 successive generations. Toxic reported in offspring from the high dose, a level which also produced adverse effects on the mothers. In a 3 study conducted at lower dose levels, no effects were seen on the ability of male or female rate at Glyphosate has produced no genetic changes in a variety of standard tests using animals and animal or bacterial cells:

The surfactant component of ROUNDUPe herbicide is reported to cause irritation to the eyes and sidn and may contribute to the irritation potential reported for this herbicide: Ingestion may produce gastrointestinal irritation mauses. vomiting and diarrhea.

PHYSICAL DATA

Appearance:

clear, viscous amber-colored solution

Odor:

practically odorless to slight amine-like odor

pH:

4.7 (1% solution)

Specific Gravity:

1.17 (Water = 1)

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot of as specification items.

SPILL, LEAK & DISPOSAL INFORMATION

SPILL/LEAK:

Observe all protection and safety precautions when cleaning up spills -- see Occupational Control Procedures.

Liquid spills on floor or other impervious surfaces should be contained or diked, and should be absorbed with attapulgite, bentonite or other absorbent clays. Collect contaminated absorbent, place in plastic-lined metal drum and dispose of in accordance with instructions provided under DISPOSAL. Thoroughly scrub floor with a strong industrial type detergent solution and rinse with water.

Liquid spills that soak into the ground should be dug-up, placed in plastic-lined metal drums and disposed of in accordance with instructions provided under DISPOSAL.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a plasticlined drum or other non-leaking container. Dispose of leaking container in accordance with instructions provided under DISPOSAL. Any recovered spilled liquid should be similarly collected and disposed of.

Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

DISPOSAL:

Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.

Metal Drums:

Triple rinse container. Then offer for recycling or reconditioning, or puncture and dispose of in a

sanitary landfill, or by other procedures approved by state and local authorities.

Metal Bulk:

Triple rinse emptied bulk containers. Then offer for recycling or reconditioning or disposal in a

manner approved by state and local authorities.

Plastic Drums and mini bulk: Do not reuse container. Return container per the Monsanto container return program. If not-

returned, triple rinse container, then puncture and dispose of in a sanitary landfill, or by

incineration, or, if allowed, by state and local authorities, by burning. If burned, stay out of smoke,

DATE: November, 1992

SUPERSEDES: February, 1992

MSDS NO.: S00012114 (previously M00007588)

FOR ADDITIONAL NON-EMERGENCY INFORMATION, CALL: 1-800-332-3111

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof. Monsanto Company makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Monsanto Company be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

Roundup[®] is a registered trademark of Monsanto Company

MSDS: 8

MAC-2062



Material Safety Data Sheet

CHEVRON DELO Heavy Duty Motor Oil SAE 30

CPS238155

Page 1 of 7

PRIESTLEY OIL & CHEMICAL 3907475
CO., INC.
P O BOX 12570
PORTLAND, OR 97212

MATERIAL ORDERED FOR: PACKAGE PICK-UP W.B. FOB WILLBRIDGE PORTLAND, OR 97210

Print Date: December 15, 1992
This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Revised to update Sections 9 (Composition Comment) and 10 (DOT Information).

1. PRODUCT IDENTIFICATION

CHEVRON DELO Heavy Duty Motor Oil SAE 30

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS238155

PRODUCT INFORMATION: (800)582-3835

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 419F (210C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

CAUTION! Do not use pressure to empty drum or explosion may result. DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark brown liquid.

BOILING POINT: NA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 10.6 cst @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457

100.0 % CHEVRON DELO Heavy Duty Motor Oil SAE 30

CONTAINING

> 80.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 20.0 % ADDITIVES INCLUDING THE FOLLOWING

< 2.0 % BUTYL BENZYL PHTHALATE

CAS85687 A toxic chemical subject to the reporting requirements of

Section 313 of Title III of the Superfund Amendments and

Reauthorization Act of 1986 and 40 CFR Part 372.

CERCLA 302.4 RQ=100 POUNDS

< 1.5 % ZINC ALKYL DITHIOPHOSPHATE

CAS68649423 A toxic chemical subject to the reporting requirements of

Section 313 of Title III of the Superfund Amendments and

Reauthorization Act of 1986 and 40 CFR Part 372.

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1. Immediate (Acute) Health Effects; NO

2. Delayed (Chronic) Health Effects; NO

3. Fire Hazard; NO

4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

ZINC ALKYL DITHIOPHOSPHATE

is found on lists: 01,10,11,

BUTYL BENZYL PHTHALATE

is found on lists: 01,10,11,12,26,28,

REGULATORY LISTS SEARCHED:

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457

01=SARA 313	02=MASS RTK	03=NTP Carcinogen	
04=CA Prop. 65	05=MI 4 06	06=IARC Group 1	
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304	
10=PA RTK	11=NJ RTK	12=CERCLA 302.4	(
13≖MN RTK	14=ACGIH TLV	15=ACGIH STEL	. \
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL	
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)	
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)	
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	27=TSCA Sect 8(e)	
28=Canadian WHMIS	29=OSHA CEILING	30=TSCA Sect 8 FYI	

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains butyl benzyl phthalate. In a cancer bioassay conducted by the National Toxicology Program (NTP), mice and rats were given butyl benzyl phthalate in their diets. All groups of male rats were terminated at six months due to excessive mortality. Female rats showed an increase in cancer but both sexes of mice did not. This study has been declared invalid and is being repeated by NTP.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457

Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 12/27/90 MSDS Number: 004457

PH: NA



MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED: 12/30/92 ******************** I. PRODUCT IDENTIFICATION **************** MOBIL DTE 13M

SUPPLIER:

24-HOUR EMERGENCY (CALL COLLECT):

(609) 737-4411 MOBIL OIL CORP.

CHEMICAL NAMES AND SYNONYMS:

CHEMTREC: (800) 424-9300

PET. HYDROCARBONS AND ADDITIVES

PRODUCT AND MSDS INFORMATION:

USE OR DESCRIPTION:

(800) 662-4525

HYDRAULIC OIL

********* II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES *********

ODOR: Mild APPEARANCE: Amber Liquid VISCOSITY AT 40 C, CS: > 31.6

VISCOSITY AT 100 C, CS: 6.5

FLASH POINT F(C): > 330(166) (ASTM D-92)

MELTING POINT F(C): NA POUR POINT F(C): -40(-40)

BOILING POINT F(C): > 600(316) VOC: < 5.00(Wt. %); 0.366 lbs/gal RELATIVE DENSITY, 15/4 C: 0.877 SOLUBILITY IN WATER: Negligible

VAPOR PRESSURE-mm Hg 20C: < .1

NA=Not Applicable NE=Not Established D=Decomposes FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

********** III. POTENTIALLY HAZARDOUS INGREDIENTS **********

None

SEE SECTIONS XII AND XIII FOR REGULATORY AND FURTHER COMPOSITIONAL DATA.

*************************** IV. HEALTH HAZARD DATA ***************** --- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---THRESHOLD LIMIT VALUE: 5.00 mg/m3 Suggested for Oil Mist EFFECTS OF OVEREXPOSURE: Slight skin irritation.

********* V. EMERGENCY AND FIRST AID PROCEDURES ********** --- FOR PRIMARY ROUTES OF ENTRY ---

EYE CONTACT: Flush thoroughly with water. If irritation persists, call a physician.

SKIN CONTACT: Wash contact areas with soap and water. High pressure accidental injection through the skin requires immediate medical attention for possible incision, irrigation and/or debridement.

INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance and call a physician. If breathing has stopped, use mouth to mouth resuscitation.

INGESTION: Not expected to be a problem. However, if greater than 1/2 liter(pint) ingested, immediately give 1 to 2 glasses of water and call a physician, hospital emergency room or poison control center for assistance. Do not induce vomiting or give anything by mouth to an unconscious person.

MOBIL DTE 13M



VI. FIRE AND EXPLOSION HAZARD DATA *************

FLASH POINT F(C): > 330(166) (ASTM D-92)

FLAMMABLE LIMITS. LEL: .6% UEL: 7.0%

EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical and water fog.

SPECIAL FIRE FIGHTING PROCEDURES: Water or foam may cause frothing.

Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. For fires in enclosed areas, firefighters must use self-contained breathing apparatus.

Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None.
NFPA HAZARD ID: Health: 0, Flammability: 1, Reactivity: 0

STABILITY (Thermal, Light, etc.): Stable

CONDITIONS TO AVOID: Extreme heat.

INCOMPATIBILITY (Materials to Avoid): Strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide.

HAZARDOUS POLYMERIZATION: Will not occur.

ENVIRONMENTAL IMPACT: Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard toll free number (800) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: Adsorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal.

WASTE MANAGEMENT: Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at any government approved waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

*********** IX. SPECIAL PROTECTION INFORMATION *************

EYE PROTECTION: Normal industrial eye protection practices should be employed.

SKIN PROTECTION: No special equipment required. However, good personal hygiene practices should always be followed.

RESPIRATORY PROTECTION: No special requirements under ordinary conditions of use and with adequate ventilation.

VENTILATION: Use in well ventilated area.



MOBIL DTE 13M

ORAL TOXICITY (RATS): Slightly toxic --- Based on testing of similar products and/or the components.

DERMAL TOXICITY (RABBITS): Slightly toxic --- Based on testing of similar products and/or the components.

INHALATION TOXICITY (RATS): Not established

EYE IRRITATION (RABBITS): Expected to be non-irritating. --- Based on testing of similar products and/or the components.

SKIN IRRITATION (RABBITS): May cause slight irritation on prolonged or repeated contact. ---Based on testing of similar products and/or the components.

--- SUBCHRONIC TOXICOLOGY (SUMMARY) ---

Severely solvent refined and severely hydrotreated mineral base oils have been tested at Mobil Environmental and Health Sciences Laboratory by dermal application to rats 5 days/week for 90 days at doses significantly higher than those expected during normal industrial exposure. Extensive evaluations including microscopic examination of internal organs and clinical chemistry of body fluids, showed no adverse effects.

---CHRONIC TOXICOLOGY (SUMMARY)---

The base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of similar oils showed no evidence of carcinogenic effects.

Transport Information:

DOT:

Shipping Name: Not applicable Hazard Class: Not applicable

- US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined not to be hazardous.
- RCRA INFORMATION: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.
- U.S. Superfund Amendments and Reauthorization Act (SARA) Title III: This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312 - FORMERLY 302) REPORTABLE HAZARD CATEGORIES: None

This product contains no chemicals reportable under SARA (313) toxic release program.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

Mobil

ı

	МО	BIL DI	re 13M						60	269	8-00	Pa	ge	4	of 5	j
CHEMICAL NAME ZINC DITHIOPHOSE ZINC ALKENYL CAR						CAS	NUMB	ER		L1 22 22	?	[TAT]	ON	ıs		
ZINC (ELEMENTAL	ANAL	YSIS)	(.09	%)		744	40-66	-6		2:	2					
			EGULAT													
1 = ACGIH ALL											P65	22	_	мт	201	
2 = ACGIH Al	7 =	TARC	24	12	_	TSCA	5=2	18	_	CA	RTK	23	-	MN	DTK	
3 = ACGIH A2	8 =	TARC	2R	12	_	TSCA	56	10	_	FI	RTK	24	_	NIT	DTK	
4 - NTP CARC	0 =	AHZO	CARC	14	_	TSCA	6	20	-	TI	RTK	25	_	DA	DTE	
5 = NTP SUS	10 -	AHZO	7	15	-	TSCA	125	21	_	T.A	RTK	26	_	RT	DTK	
J 1111 555	10	Opin				WHMI		-1		LA		20		11.1	14 1 14	
CARC = CARCINOGE	in s	us = 9														
Oraco Cracornoor	,, w				٠.						_					
NOTE: MO	BIL	PRODUC	CTS AR	E NO	T	FORM	ULATE	D T	0 (CON.	CAIN	PCBS				
	ملد ماد ماد ماد ما	و مله ماه ماه ماه ماه						مادماد	. عد ماد	، ماد ماد ما	مال ماله ماله ما	، ماد ماد ماد ماد	د علد ما		و علد ملد علد ع	_
**********	CAXXX	NT DE	CCDIDT CCDIDT	I. I	N	SKED1	ENTS	בטר. אא	rn.	и и х : Т	*****	C MIII	401	 	****	•
INGR CONTAINS TWO OF	CEDIE	MI DE					_ r _ l .	ERU.	> -	ا بيراري.	UA 	3 NU			>	į
רטאדאנאט דעט טנ	MOR	F OF	THE EC	TIOL	JTN	JC.	`	on .	חח חח	1 -					•	i
BASE OILS:	(1101)	01	111111111		. 11	10	-	,,,	00							
DISTILLATES	PETR	OLEUM) HYD	ROTE	ÈE.	ATED							54	742-	-54-	7
HEAVY PARA			,									,	J 7 .	7-7-2	J-	•
DISTILLATES			102	VENT	г—								ςΔ.	742-	-65-0	n
DEWAXED H					•										_	
DISTILLATES				ROTE	F	ATED					-		κ4.	742.	-53-4	6
LIGHT NAPI			,	/I(\U_11	162	NI LD							J T .	, 72	JJ 1	,
promi wat																
MAY CONTAIN ON	E OR	MORE	OF THE	FOI	LLO	DWING										
ADDITIVE COMPO	ONENT	S:														
ACRYLATE POLY	YMERS	3					<	7.	00							
2-PROPENOIC	ACID.	2-ME	THYL				<	5.	00				68	171	-50-6	б
DODECYL ES	STER.	POLY	MER WI	TH	Æ.	THYL	2-	- •	- +						- •	_
METHYL-																

2-METHYL-2-PROPENOATE

ZINC CONTAINING ALKYL AMIDES

ZINC DIALKYL DITHIOPHOSPHATES

0.65 NJT 003066009-5099P

68988-46-5

0.63

MOBIL DTE 13M

MAY CONTAIN ONE OR MORE OF THE FOLLOWING < 2.00 COMPONENTS EACH OF WHICH IS PRESENT AT LESS THAN ONE PERCENT: DISTILLATES (PETROLEUM), SOLVENT-REFINED HEAVY PARAFFINIC LUBRICATING OILS (PETROLEUM), C15-30 HYDROTREATED NEUTRAL OIL-BASED, CONTG. SOLVENT DEASPHALTED RESIDUAL OIL LUBRICATING OILS (PETROLEUM), C20-50, HYDROTREATED NEUTRAL OIL-BASED HIGH-VISCOSITY DISTILLATES (PETROLEUM), SOLVENT-REFINED LIGHT NAPHTHENIC CALCIUM SULFONATES ALKYL PHENOLS POLYOLEFIN ACID, SALT POLYOLEFIN AMIDE ALKENEAMINE POLYOLEFIN POLYALKYL METHACRYLATE KEROSINE DISTILLATES (PETROLEUM), SOLVENT-DEWAXED LIGHT PARAFFINIC DIALKYL FUMERATE/VINYL ACETATE POLYMER ORGANOSILICONE FLUID

PREPARED BY: MOBIL OIL CORPORATION

ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT, PRINCETON, NJ FOR FURTHER INFORMATION, CONTACT:

MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL 3225 GALLOWS ROAD, FAIRFAX, VA 22037 (800) 227-0707 X3265



1420 Harbor Bay Parkway Suite 210 Alameda, California 94501 800-548-8381

MATERIAL SAFETY DATA SHEET

FLEISCHMANN'S VINEGAR

ate Issued

September 3 1992

rade Name:

Vinegar, All Varieties

hemical Name:

Acetic Acid

hemical Formula:

CH,COOH

efinition:

Product made by the acetic fermentation of ethyl alcohol and contains 5 to 30% acetic

acid (or 50 to 300 grain vinegar).

fanufacturer's Name and Address:

integrated ingredients.

1420 Harbor Bay Parkway, Suite 210

hone Number:

HEALTH HAZARD DATA

nhalation:

Threshold Limit Value:

10 ppm

Short Term Exposure Limit

15 ppm for 15 minutes

Odor/Threshold

1.0 ppm

Inhalation of vapors can cause irritation to respiratory tract.

kin:

Contact may cause mild injury and burns from vinegars of 10% acetic acid and greater. Dilute

solutions may cause dermatitis in some sensitive individuals.

lyes:

Contact may cause severe burns and permanent corneal injury from concentrated vinegars.

May be followed by blindness. High vapor concentrations may result in conjunctivitis.

ngestion:

Concentrated vinegars may cause pain, irritation and burns in mouth, esophogus and stomach.

EMERGENCY & FIRST-AID PROCEDURES

n case of eye or skin contact, flush immediately and thoroughly with water.

saturated clothing should be removed and washed.

f vapors are inhaled extensively, exposed person should be removed to fresh air immediately.

f swallowed, water should be consumed to dilute.

Do not induce vomiting.

Do not give emetics or baking soda.

Call a physician.

FIRE AND EXPLOSION HAZARD DATA

Flash Point:

40°C closed cup

(Acetic Acid)

Auto Ignitition Temperature:

427°C

(Acetić Acid)

Flammable Limits in Air:

4.0% - 16%

(Acetic Acid)
Fire Extinguishing Agents Recommended:

Water spray, foam CO, or dry chemical. Water may be used to dilute spills and reduce

flammability.

Unusual fire and explosion hazards:

Toxic gases and vapors may be released in a fire involving concentrated vinegars.

I grand garage

- Fleischmann's

 $\forall m_k g \mid t$

(i,i),(i,j)

Pine Caltara

Spice

Cendoriz

Islands



MATERIAL SAFETY DATA SHEET

FLEISCHMANN'S VINEGAR REACTIVITY DATA

		•		
-	n	. 1	1	T T
4	Lø			

Hazard Polymerization

X] Stable] Unstable [X] Will not occur [] May occur

icompatibility:

Contact with strong oxidizers may cause fires and will react with strong caustics to cause violent spattering and heat.

lazardous decomposition products:

-- May produce carbon monoxide (CO) and/or carbon dioxide (CO₂).

SPILL OR LEAK PROCEDURES

If vinegar is spilled, dike to contain, ventilate area, dilute with water: may be neutralized with addition of soda ash.

Do not flush to streams or sewers.

Waste Disposal Methods:

Treatment or disposal of waste generated by use of vinegar should be reviewed in terms of applicable federal, state and local laws and regulations. Users are advised to consult with appropriate regulatory agencies before discharge, treatment or disposal.

SPECIAL PROTECTION INFORMATION

Respiratory Protection:

As required to prevent exposure to concentrations which exceed the permissible level.

Ventilation:

Local exhaust recommended. Mechanical recommended.

Eyes and Face:

Safety glasses or plastic face shield required.

Hands, Arms, Body:

Rubber or neoprene gloves recommended.

Rubber apron or other protective equipment as required to reduce direct contact.

Other Equipment:

Eye wash station, safety shower.

PHYSICAL DATA

Appropriate color and odor for type of vinegar

Vapor Pressure (MM Hg)

% Volatiles by Volume

Specific Gravity

11 MM

100%

1.01 - 1.04

Boiling Point 215°F @ 100 grain

pH 2.2 @ 100 grain Solubility in Water Complete

Vapor Density (Air=1)

2.1

Йегосината з Менедан

Dom.

, Pag Caltura

Spure Teignids

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203 503-286-1677 • FAX: 289-2272

VENDOR: 00812642

ATTN MARY DeLONG

STEINFELD'S PRODUCTS CO.

P.O. BOX 4800

PORTLAND, OR 97208-4800

PURCHASE ORDER N	Pι	JRCI	HASE	ORI	DER	NO.
------------------	----	------	-------------	-----	-----	-----

895504

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
 Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

		19 4 4	
Date Issued	8/18	3/95	
Date Required	8/21	1/95	
Terms	NET		
Via	WILL	CALL	
Freight Terms	FOB:	DESTINATION	

This order is 🗵 a confirmation 🔲 not a confirmation

	Tilla Older 13	EE a COIII	innation — not a continuation				•
item No.	Quantity	Unit of Meas	Description	Store No.	Machine No.	Account No.	Price
91	/ 192		10% WHITE VINEGAR, INDIAN SUMMER 120 GRAIN (DRUM=48 GL)* M.S.D.S.REQUIRED			00-00-0420-0008	1.32
			Supplier #: 120 GRAIN VINEGAR STEINFIELD'S DRUM DEPOSIT = \$ 18	OEM: VINEGA	R		
-02	4	EACH	DRUM DEPOSIT	99-99-999		08-73-6200-0000	18.00
0.3	<u>4</u> -	EACH	DRUM CRÉDIT (Dativar 8/17/45)	99-99-999		08-73-6200-0000	18.00
<u>2</u> s.			** CONFIRMING PURCHASE ORDERDO NOT D	UPLICATE **			
							,
		;					

APPROVAL	ORDER MUST BE SIGNED
aue	2 Imarch a

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910,1200. Standard must be consulted for specific requirements.

O.S. Department of Eabor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072



IDENTITY (As Used on Labo	l end Ltst) SG-575			os are not permitted is available, the spa		
Section I				*		
Manufacturer's Name		':	Emergency Teles	phone Number	4. ;	
Apollo Chemical &	Equipment Compan	Υ	(800)367-			
Address (Number, Street, Clt)			1 '	er for Information	in the second	•.,
6647 NE 47th Aven	ne		(503)249-			
Portland, Oregon	97218		Date Prepared			
			Signature of Prep	oerer (opochar)	erre Syria — Esercia e a Chemilia.	• • • • • • • • • • • • • • • • • • •
Section II — Hazardou	s Ingredients/Identity	Information	ì ·-	a de gra Ma	Algeria (n. 1944) 11 January - Talendard (n. 1944)	n ja ka laugu kanalan la n Hali Kala an m
Hazardous Components (Spe	scific Chemical Identity; Corr	mon Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommende	s ed 🛷 . 46 (optiona
2-Butoxyethanol	CAS #111-76-	2	50	25		
Sodium Metasilica	te CAS #6834-92	-0		2mg/m³ · 1	for powder	only
					Maria and Maria	· · · · · · · · · · · · · · · · · · ·
	·					
HMIS				<u>Minimal</u>		
Health	_1		the state of the s	Slight		r egi e gettegal ve ga
<u>Fire</u>	_2		2 =	Moderate -		
Reactivity	0	·	3 =	Serious •		
Specific Hazard	Combustible Liqu	rid	4 -	Severe	HIN 4 F	4002
					JUN I 3	1835
ر			. ,		THE STATE OF THE S	
n.				-		
<u> </u>				3	د دون دورود الاين الاين المعالم الم	Service Servic
Section III — Physical	Chemical Characteris	TICS		The second second second second	ရှိတွေရှိရှိသောကို ပြုခြေခဲ့သည်။ ရက်တွေရသည်များ အောက်လေး မေရောက်ကြောင်း သည်သည်။ မြောက်	general and the second
Boiling Point	About	210°	Specific Gravity (I	H ₂ O = 1)	មានី២ ស្រាស់ធ្វើប្រជាធិ មាន ប្រធានធ្វើប្រជាធិ	1.016
Vapor Pressure (mm Hg.)	•	NA	Melting Point	The Trade of the State Const.		N/A
Vapor Density (AIR = 1)	n de la companya de	1.116	Evaporation Rate (Butyl Acetate =		Security of security of the	NA 2
Solubility in Water					and a second	1
10	Complete					
Appearance and Odor	Reddish Pink -	Slight co	m cmall	**		
Section IV - Fire and	· · · · · · · · · · · · · · · · · · ·		n Shell			, , , , , , , , , , , , , , , , , , ,
Flush Point (Method Used)			Flammable Limits		LEL	UEL
· ((mound 0300)	165° F TCC	· Free ·		1 - 17 - 43 - 14		7 /
Extinguishing Media		rv chemica	. chemical	foam. carbon	dioxīde	
Special Fire Fighting Procedu	ire#		<u> </u>	and the second of the second o	AND WELL TO SERVICE THE	to an analysis of the second o
	Use self-conta	ined breat	ning apparati	us with full	face pièce	ereneman VV
	•. 9		·		* 550	A to the second
Unusual Pire and Explosion I	None				en oracle e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e () e	end of
	<u></u>	·				

(Reproduce locally)

				- 	····	· · · · · · · · · · · · · · · · · · ·	
	- Reactivity D	oto	Condition to the d		VIII TO THE TOTAL TOTAL TO THE		
الماطفين			Conditions to Avoid AVO1	d repeated	freeze and	thaw cycles	
	Stable	xx			• • • • • • • • • • • • • • • • • • • •		
nsompatibility	(Malenals to Avo		ids, strong oxidi	zina adents			
tazaroous Doc	этрээлжээ ох Вури	oducts :					
Hazardous	May Occur	,	Carbon monoxide a Conditions to Avoid	ind/or carbo	on aloxide		te.
"clymonzation			*				
	Will Not Occur	xx		•			•
Section VI -	– Health Hazz	rd Data		 	······································	•	
Rounasi of Emr	y:	nhalation?	· · · · · · · · · · · · · · · · · · ·	Skin?		Ingestion?	
Hoskin Hazards	(Acure and Chron	C)		_X	<u> </u>	X	•
May cause	eye or skin i	<u> mitatio</u>	n. Ingestion may cau	se nausea or c	liarrhea. Inge	estion may also	cause imitation
or burns	to mouth, thro	at, and	esophagus. Vapors or	absorbtion of	2-Butoxyethar	noi through the	skin may cause
	dizziness, or	nausea.		· .	· -		
Carcinogenicity:		אפר		WRC Monograph	s?	OSHA Regulate	d?
	Contain	s no kn	own or suspected	carcinogen	<u> </u>		
Signs and Symi	xoms of Exposure		, ,				
	2					,	
Hodicai Conditio	ons						
Generally: Apgra	valed by Exposum	<u>Liver.</u>	kidney; blood di	<u>isorders ma</u>	<u>ybe aqqrava</u>	ted	
	,	other			•	30.	
Eurordeuch sud	FIRST AND PROCEED	For. 01	verexposure to va	por move to	fresh air.	For contact	with skin and
			water for 15 mii				
ection VII —	Precautions	for Safe	Handling and Use		Substitution of the		
	in Case Materia				1		
	_		<u>sonnel, contain s</u>	<u>pill, venti</u>	<u>late area m</u>	op up and col	Tect Inquia
and pla	ce in a DO	approv	<u>ved container</u>		•		
61			<u> </u>				
usa Disposal M	m∞ Dispose	e of in	accordance with	all federal	, state, an	d local regul	lation
	Taken in Handlin			o Voca con	atinon tich	+ly closed	
			l ventilated plac	e. Keep Con	ia ci ner bi di	ICIA CLOSEO	
Keep fr	om freezin						<u> </u>
	None nor	nally r	equired	· ·	 	· · · · · · · · · · · · · · · · · · ·	
				<u></u>			
ction VIII -	Control Mea	sures					
Spresory Proced	eqti yeaq2) noo	annrov	ed respirator for	organic va	anors is TIN	V is exceeded	en de la companya de La companya de la co
	ocal Exhaust			Specia	J		· ·
<u> </u>	UO Hochanical (Gene		ceed TLV Values ·	Other			<u> </u>
		<u></u>	,				(
xactive Gloves	Rubber G			Eye Protection	Chemical	Goggles	
her Protective C	lothing or Equipm	ine	e normally requir	red	_		
איניון אַפּאָקיק פָּרִיּ	OCOS COMPOS do		section VII safe		and use and	wach chin an	nd clothing after
CONTAC	r econinienda	CIUII II	Section VII Sale	e nanui ing	and use and	MOSIL SKIII di	ia crocining at ce



UNOCAL®

MATERIAL SAFETY DATA SHEET

Unocal Corporation 1201 West 5th Street Los Angeles, California 90017

Product Name: 140 Solvent 66/3

Product Code: 11106

Page 1 of 9

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 140 Solvent 66/3

Product Code: 11106

Synonyms: AMSCO Solv 1106

Generic Name: Volatile solvent

Chemical Family: Hydrocarbon mixture

Responsible Party: Unocal Petroleum Products and Chemicals Div.

Hydrocarbon Sales 1650 East Golf Road Schaumburg, Illinois

60196-1088

For further information contact

8am - 4pm CST, Mon - Fri: 1-800-967-7601

EMERGENCY OVERVIEW

24 Hour Emergency Telephone Numbers:

For Transportation Emergencies CHEMTREC Cont. US: (800)424-9300 Alaska & Hawaii (collect): (202)483-7616

Health Emergencies for Unocal/UNO-VEN Products: Los Angeles Poison Information Center

Cont. US: (800)356-3129 Outside US: (213)222-3212

Health Hazards: Causes skin irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. Keep container tightly closed. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash thoroughly after handling.

Physical Hazards: Combustible liquid and vapor. Keep away from heat, sparks, flames or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment).

Physical Form: Liquid

Appearance: Water White

Issue Date: 01/04/93

Revised Sections: New Format

- Unocal -

Health:

Product Name: 140 Solvent 66/3

Product Code: 11106

Page 2 of 9

Odor: Characteristic hydrocarbon

NFPA HAZARD CLASS:

1 (Slight) Flammability: 2 (Moderate)

Reactivity: 0 (Least)

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS	EXPOSURE GUIDELINE					
Stoddard Solvent CAS# 8052-41-3	Limits 100 ppm 100 ppm 200 ppm 100 ppm	Agency ACGIH OSHA MSHA Cal.OSHA	Type Twa Twa Twa Twa			

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS:

Bye: Contact may cause mild eye irritation including stinging, watering and redness.

Skin: Skin irritant. Contact may cause redness, burning, drying and cracking of the skin and skin damage. No harmful effects from skin absorption have been reported.

Inhalation (Breathing): Expected to have a low degree of toxicity by inhalation.

Ingestion (Swallowing): Low degree of toxicity by ingestion. ASPIRATION HAZARD - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Signs and Symptoms: Effects of overexposure may include irritation of the nose and throat, irritation of the digestive tract and signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination and fatigue).

Cancer: No data available.

Target Organs: Inadequate data available.

Developmental: Inadequate data available.

Other Comments: This product is sometimes used as a dry-cleaning

Issue Date: 01/04/93

Revised Sections: New Format

Appendix33-001136

- Unocal -

Product Name: 140 Solvent 66/3

Product Code: 11106

Page 3 of 9

solvent. Retained solvent in absorbent clothing (e.g., shoulder pads) that remains in contact with the skin for prolonged periods has caused severe skin irritation including redness, swelling, burns and severe skin damage. Care must be taken to ensure that garments cleaned with solvents are completely dry before being worn.

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage (sometimes referred to as Solvent or Painters' Syndrome). Intentional misuse by deliberately concentrating and inhaling this product may be harmful or fatal.

Medical Conditions: Conditions aggravated by exposure may include skin disorders and respiratory (asthma-like) conditions.

4. FIRST AID MEASURES

Eye: If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

Skin: Remove contaminated shoes and clothing and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops, seek medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious, place on the left side with the head down. If possible, do not leave victim unattended. Seek medical attention.

Issue Date: 01/04/93

Revised Sections: New Format

Product Name: 140 Solvent 66/3

Product Code: 11106

Page 4 of 9

5. FIRE FIGHTING MEASURES

Flammable Properties: Flash Point: 140'F (TCC)

OSHA Flammability Class: Combustible liquid

LEL: 1.0 / UEL: 7.0

Autoignition Temperature: 440°F

NFPA HAZARD CLASS

Health: 1 (Slight)
Flammability: 2 (Moderate)
Reactivity: 0 (Least)

HMIS HAZARD CLASS

Health: 2 (Moderate)
Flammability: 2 (Moderate)
Reactivity: 0 (Least)

Unusual Fire & Explosion Hazards: This material is combustible and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment). May create vapor/air explosion hazard if heated. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can explode in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, halon, foam or water spray is recommended. Water or foam may cause frothing of products heated above 212 °F. Halon may decompose into toxic products. Carbon dioxide can displace oxygen. Use caution when applying halon or carbon dioxide in confined spaces.

Fire Fighting Instructions: Emergency responders in the danger area should wear bunker gear and self contained breathing apparatus for fires beyond the incipient stage (29 CFR 1910. 156). In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate damage area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from danger area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

6. ACCIDENTAL RELEASE MEASURES

Combustible. Keep all sources of ignition away from spill/release. Use non-sparking tools and explosion proof

Issue Date: 01/04/93

Revised Sections: New Format

Product Name: 140 Solvent 66/3

Product Code: 11106

Page 5 of 9

equipment. Stay upwind and away from spill/release. Isolate danger area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8). Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Spilled material may be absorbed into an appropriate absorbent material. Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

7. HANDLING AND STORAGE

Handling: Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276. The use of respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8). Wash thoroughly after handling. Do not wear contaminated clothing or shoes. Use good personal hygiene practice.

"Empty" containers retain residue (liquid and/or vapor) and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All other containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this product, refer to Occupational Safety and Health Administration Regulations, ANSI Z49.1 and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

Storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well ventilated areas away from heat and all sources of ignition. Post area "No Smoking or Open Flame." Store only in approved containers. Keep away from any

Status:

Issue Date: 01/04/93

Revised Sections: New Format

Appendix33-001139

Final Revised

- INOCAL -

Product Name: 140 Solvent 66/3

Product Code: 11106

Page 6 of 9

incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used.

Personal Protective Equipment (PPE):

Respiratory: The use of respiratory protection is advised when concentrations exceed the established exposure limits (see Section 2). Depending on the airborne concentration, use a respirator or gas mask with appropriate cartridges and cannisters (NIOSH approved, if available) or supplied-air equipment.

Skin: The use of gloves impermeable to the specific material handled is advised to prevent skin contact, possible irritation, and skin damage.

Eye/Face: Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended.

Other Protective Equipment: Eye wash and quick drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse. It is recommended that impervious clothing be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at

20°C (68°F) and 760 mm Hg (1 atm).

Flash Point: 140°F (TCC)

Flammable/Explosive Limits (%): LEL: 1.0 / UEL: 7.0

Autoignition Temperature: 440'F

Issue Date: 01/04/93 Status: Final Revised

Revised Sections: New Format

- UNOCAL -

Product Name: 140 Solvent 66/3

Product Code: 11106

Page 7 of 9

Burn Rate (solids only): No Data

Appearance: Water White Physical State: Liquid

Odor: Characteristic hydrocarbon

pH: Not applicable

Vapor Pressure (mm Hg): 2 Vapor Density (air=1): 5.1 Boiling Point: 370-405'F

Freezing/Melting Point: No Data Solubility in Water: Negligible Specific Gravity: 0.772 (60°F/60°F)

Heat Value (BTU): 20,633

Volatile Organic Compounds (VOC) Content: 100%, 772 g/liter

Percent Volatile: 100 vol. *
Evaporation Rate (nBuAc=1): 0.08

Viscosity: 1.79 cst

Bulk Density: 6.55 lbs/gal @ 15°C

Molecular Weight: 155 g/mole

BENZENE = ZPPM

10.STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions of storage and handling.

Conditions To Avoid: Avoid all possible sources of ignition (see Sections 5 and 7).

Incompatible Materials: Avoid contact with strong oxidizing agents and reducing agents.

Hazardous Decomposition Products: Combustion can yield carbon dioxide and carbon monoxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

No definitive information available on carcinogenicity, mutagenicity, target organs or developmental toxicity.

Issue Date: 01/04/93

Revised Sections: New Format

Status: Final Revised

- THOCAL -

Product Name: 140 Solvent 66/3

Product Code: 11106

Page 8 of 9

12 DISPOSAL CONSIDERATIONS

RCRA hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a RCRA hazardous waste. (40 CFR 261.10-24).

State and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

13. TRANSPORT INFORMATION

DOT Proper Shipping Name / Technical Name: Naphtha, Solvent Hazard Class or Division: Combustible liquid ID #: UN1256

14. REGULATORY INFORMATION

This product contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

--None--

WARNING: This product contains the following chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249. 5):

COMPONENTEFFECTBenzeneシャーCancerTolueneDevelopmental Toxicant

This product has not been identified as a carcinogen by NTP, IARC,

EPA (CERCLA) Reportable Quantity: --None--

Issue Date: 01/04/93 Status: Final Revised

Revised Sections: New Format

UNOCAL

Product Name: 140 Solvent 66/3

Product Code: 11106

Page 9 of 9

15.DOCUMENTARY INFORMATION

Issue Date: 01/04/93

Previous Issue Date: 06/14/92

Product Code: 11106

Previous Product Code: None

16.DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. However, no warranty of merchantability, fitness for any particular purpose, or any other warranty is expressed or is to be implied regarding the accuracy or completeness of this information the results to be obtained from the use of this information or the product, the safety of this product, or the hazards related to its use. This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

Issue Date: 01/04/93

Revised Sections: New Format

Status: Final Revised



Material Safety Data Sheet

CHEVRON RPM Universal Gear Lubricant SAE 85W-140

CPS225039

Page 1 of 6

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting

PRIESTLEY OIL & CHEMICAL 3907475

CO., INC.

P O BOX 12570

PORTLAND, OR 97212

MATERIAL ORDERED FOR:
PACKAGE PICK-UP W.B.
FOB WILLBRIDGE
PORTLAND, OR 97210

Print Date: January 08, 1993

1. PRODUCT IDENTIFICATION

CHEVRON RPM Universal Gear Lubricant SAE 85W-140

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS225039

PRODUCT INFORMATION: (800)582-3835

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004553 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004553

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 410F (210C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; HMIS RATINGS: Health 0; Flammability 1; Reactivity 0; Other NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or explosion may result.

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004553

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Dark green liquid.

BOILING POINT: NDA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.91 @ 15.6/15.6C

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA VAPOR DENSITY (AIR=1): NA VISCOSITY: 24 cst @ 100C Min.

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE NUMBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004553

100.0 % CHEVRON RPM Universal Gear Lubricant SAE 85W-140

CONTAINING

> 90.0 % LUBRICATING BASE OIL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, CAS 72623837.

< 10.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1. Immediate (Acute) Health Effects; NO

2. Delayed (Chronic) Health Effects; NO

Fire Hazard; NO

4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO

None of the components of this material are found on the regulatory lists shown below.

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	ll=NJ RTK	12=CERCLA 302.4
13=MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22=TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	27=TSCA Sect 8(e)
28=Canadian WHMIS	29=OSHA CEILING	30=TSCA Sect 8 FYI

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004553

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is

to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 0 Revision Date: 12/19/90 MSDS Number: 004553



Material Safety Data Sheet

CHEVRON Ultra-Duty Grease EP NLGI 2

CPS238011

Page 1 of 6

PRIESTLY OIL
ATTN: KAETHE
2429 N. BORTHWICH
PORTLAND, OR 97227

Print Date: January 21, 1993
This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting requirements under SARA Title III and many other laws. If you resell this product, this MSDS must be given to the buyer or the information incorporated in your MSDS. Discard any previous edition of this MSDS.

Changes have been made throughout this Material safety Data Sheet. Read the entire document.

1. PRODUCT IDENTIFICATION

CHEVRON Ultra-Duty Grease EP NLGI 2

PRODUCT NUMBER(S): CPS238011

PRODUCT INFORMATION: (800)582-3835

Revision Number: 2 Revision Date: 03/22/92 MSDS Number: 004501 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

2. FIRST AID-EMERGENCY PH. (800)457-2022/(510)233-3737 (24 HR)

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation.

DERMAL TOXICITY:

If absorbed through the skin, this substance is considered practically non-toxic to internal organs. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 2 Revision Date: 03/22/92 MSDS Number: 004501

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: NA AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

Revision Number: 2 Revision Date: 03/22/92 MSDS Number: 004501

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Red grease.

BOILING POINT: NA MELTING POINT: NDA EVAPORATION: NA SPECIFIC GRAVITY: NDA VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 22 cSt @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PH. (800)424-9300/(202)483-7616 (24 hr) SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills. Clean up spills immediately, observing precautions in Protective Equipment section.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory. This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Ultra-Duty Grease EP NLGI 2

CONTAINING

> 70.0% DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC

CAS64742525 5 mg/m3 mist ACGIH TLV

10mg/m3 mist ACGIH STEL

Revision Date: 03/22/92 MSDS Number: 004501 Revision Number: 2 NDA - No Data Available NA - Not Applicable

į

5mg/m3 mist OSHA TWA

AND

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547

5mg/3 mist ACGIH TLV 10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

< 30.0 %

ADDITIVES

TLV - Threshold Limit Value

TWA - Time Weighted Average

STEL - Short-term Exposure Limit

TPQ - Threshold Planning Quantity

RQ - Reportable Quantity

CPS - CUSA Product Code

CC - Chevron Chemical Company

CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

- 1. Immediate (Acute) Health Effects; NO
- 2. Delayed (Chronic) Health Effects; NO
- 3. Fire Hazard; NO
- 4. Sudden Release of Pressure Hazard; NO
- 5. Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC

is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

REGULATORY LISTS SEARCHED:

01=SARA 313	02=MASS RTK	03=NTP Carcinogen
04=CA Prop. 65	05=MI 406	06=IARC Group 1
07=IARC Group 2A	08=IARC Group 2B	09=SARA 302/304
10=PA RTK	11=NJ RTK	12=CERCLA 302.4
13≠MN RTK	14=ACGIH TLV	15=ACGIH STEL
16=ACGIH Calculated TLV	17=OSHA TWA	18=OSHA STEL
19=Chevron TLV	20=EPA Carcinogen	21=TSCA Sect 4(e)
22*TSCA Sect 5(a)(e)(f)	23=TSCA Sect 6	24=TSCA Sect 12(b)
25=TSCA Sect 8(a)	26=TSCA Sect 8(d)	28=Canadian WHMIS
29=OSHA CEILING		

Revision Number: 2 Revision Date: 03/22/92 MSDS Number: 004501

11. PRODUCT TOXICOLOGY DATA

EYE IRRITATION:

The Draize Eye Irritation Score (range, 0-110) in rabbits is 2.3/110.

SKIN IRRITATION:

The Draize Skin Primary Irritation Score (range, 0-8) for a 4-hour exposure (rabbits) is 0.6/8.0.

DERMAL TOXICITY:

The dermal LD50 in rabbits is greater than 5.0 gm/kg.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 2 Revision Date: 03/22/92 MSDS Number: 004501

oil re-refining co, inc.

4150 N. Suttle Road Portland, OR 97217 (503) 286-8352

1-800-367-8894

EPA# WAD 980986012

P. O. Box 1407 701 Bozarth Woodland, WA 98674 (206) 225-6571

FAX TRANSMISSION COVER SHEET

FAX NUMBER (503) 286-5027 DATE 25-93 COMMENTS: This is the current one. Bill also test test nesults. We are transmitting 5 pages, including this cover sheet. Please contact us if any portion of this transmission is not received, or is illegible.



MATERIAL SAFETY DATA SHEET

Drain OII 🧸

Manufacturer: CLEANCARE CORPORATION

Phone No: (206) 627-1976

Emergency Phone No: (206)627-1976 (24-Hour Emergency Response)

Prepared by: CLEANCARE CORPORATION

Section 1 - Material Identification and Information

Components - Hazardous None

Components - Non-hazardous Petroleum Hydrocarbons - aliphatic Lubricating Oil additives

99+% <1 %

(butyl acetate = 1)

0.8 - 0.9

Not Reactive

N.A.

N.A.

Specific Gravity -

Melting Point

Evaporation Rate

Section 2 - Physical/Chemical Characteristics

Boiling Point N.A. Vapor Pressure N.A. Vapor Density H.A.

(air = 1)

Solubility in Not Soluble

Water

Water Reactive

Appearance and odor

Brown to black slightly viscous liquid odor of oil

Section 3 - Fire and Explosion Hazard Data

Flash Point

Autoignition Temp. N.A. Flanmability Limits in Air

Extinguisher Media:

'Special Fire Fighting

Procedures: Use of SCBA may be required.

may product CO

Unusual Fire/Explosion Hazards:

>230 F (closed tester)

LEL N.A. UEL N.A.

Foam, Carbon Dioxide or dry? chemical extinguisher

Incomplete comubation

Unknown - hot vapors or aerosol may present a hazard.

Section 4 - Reactivity Hazard Data

Stability Conditions to avoid: Incompatibility: Hazardous decomposition Products:

Hazardous Polymerization:

Stable Heat, sparks or open flame. Oxidizers

Incomplete combustion may produce Carbon Monoxide Will Not Occur

Section 5 - Health Hazard Data

Primary Routes of Entry: Carcinogen Listed in: lleal th flazards - acute:

- chronic: Sign/Symptoms of exposure Medical Conditions Unknown

aggravated by exposure

First Ald Procedures - seek medical assistance for further treatment,

Unknown

N.A.

observation and support if necessary. Eye contact:

Flush immediately with clear water - see a physician.

Not Listed

Skin absorption, ingestion

Dermatitis - other hazards unknown

Clean area with soap and water - if irritation

results see a physician.

Inhalation: Ingestion:

Skin contact:

Remove to fresh air - see a physician. Immediately call for medical assistance.

Section 6 - Control and Protective Measures

Respiratory Protection: Protective Gloves: Eye Protection: Ventilation to be used: Other protective clothing: Hygienic Work Practices:

None required Recommended Recommended Local Exhaust None reoutred Normal work practices .

Section 7 - Precautions for Safe Handling and Use/Leak Procedures

Steps to be Taken (If Material is Spilled or Released): Soak up spilled material with absorbent. Clean hard surfaced areas with detergent and water. Remove contaminated soil for disposal.

Waste Disposal Methods: Incineration or landfill in accordance with state and local regulations.

Handling and Storage Precautions: . Work area should be ventilated. Keep away from heat or flame.

Special Hazards: None

PRODUCT CODE: 78810 - 78812 PRODUCT NAME: KNOT WIRE CUP BRUSH 75787
This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As used on Label and List): KNOT WIRE CUP BRUSE 75787 - Product Identification SECTION I TELEPHONE NUMBERS: MANUFACTURERS NAME AND ADDRESS: KAR PRODUCTS Rush Poison Control (800)752-7869 Date Entered: 04/19/93 Last Revision: 04/19/93 461 N. Third Avenue Emergency: • (708)296-6111 Des Plaines, IL. 60016 Information: MSDS Printed: 10/28/93 SYNONYMS: CHEMICAL FAMILY: HAZARD LABEL: MOLECULAR FORMULA: MOLECULAR WEIGHT: NE or NA - Hazardous Ingredients/Identity Information SECTION II **PERCENTAGE** HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME) CAS # OSHA PEL ACGIH TLV OTHER LIMITS IRON 1.0 - 99.0 Iron 5 mg/m3 0.25 - 1.25 MANGANESE 1.0 mg/m3 Manganese Dioxide 1.07 - 2.0 Trace Elements TRACE ELEMEN N/A - Physical/Chemical Characteristics SECTION III BOILING POINT: NE or NA SPECIFIC GRAVITY: (Water = 1): 7.6 - 7.9 MELTING POINT: NE or NA VAPOR PRESSURE (mm.Hg): . . . N/A VAPOR DENSITY (Air=1):. . . . N/A EVAPORATION RATE:] Gas N/A PHYSICAL STATES: [3 Liquid (Butyl Acetate=1) SOLUBILITY IN WATER:.... [X] Solid N/A PERCENT VOLATILE: APPEARANCE AND ODOR: Gray Metal - Odorless Fire and Explosion Hazard Data SECTION IV METHOD USED: N/A **EXPLOSIVE LIMITS:** LEL: N/A UEL: N/A FLASH PT: NE or NA EXTINGUISHING MEDIA: No hazard - Not combustible in air. SPECIAL FIRE FIGHTING PROCEDURES: N/A UNUSUAL FIRE AND EXPLOSION HAZARDS: N/A SECTION V - Reactivity Data STABILITY: Unstable [Stable [X] CONDITIONS TO AVOID (Instability): INCOMPATIBILITY (MATERIALS TO AVOID): Avoid acids. HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Fumes and/or gases from welding or burning operations. HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X] CONDITIONS TO AVOID (Hazardous Polymerization): SECTION VI - Health Hazard Data Skin? Eves? Ingestion? Other: SEE HEALTH HAZARDS ROUTE(S) OF ENTRY: Inhalation? HEALTH HAZARDS (Acute and Chronic): Steel products in the natural state do not present a inhalation, ingestion or contact hazard; however, operations such as burning, welding, sawing, brazing and grinding may release fumes and/or dusts which may present health hazards if TLV's are exceeded. OSHA Regulated? Not considered to be a carcinogen. CARCINOGENITY: NTP7 IARC Monographs? LD 50/LC 50: RECOMMENDED EXPOSURE LIMITS:

considered to be hazardous chemicals as defined by the Federal OSNA Hazard Communication Standards.

Exposure to the constituents of these products will only occur during activities such as welding or burning. However, because of the low toxicity of the components and/or low air levels anticipated during such activities, these products are not

SIGNS AND SYMPTOMS OF EXPOSURE:

PRODUCT CODE: 78810 - 78812

PRODUCT NAME: KNOT WIRE CUP BRUSH 75787

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Chronic diseases or disorders of the respiratory system.

EMERGENCY AND FIRST AID PROCEDURES:

EYE CONTACT: Flush well with running water to remove particulate. SKIN CONTACT: Wash area well with soap and water.

INHALATION: Remove to fresh air. INGESTION: Not considered an ingestion hazard.

SECTION VII - Precautions for Safe Handling & Use

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

N/A

WASTE DISPOSAL METHOD:

Any excess product can be recycled for further use or disposed by methods which are in accordance with Local, State and Federal regulations.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

HAZARD LABEL INFORMATION:

OTHER PRECAUTIONS:

SECTION VIII - Control Measures

PROTECTIVE EQUIPMENT SUMMARY - HAZARD LABEL INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE): NIOSH approved dust fume respirator when TLV is exceeded.

VENTILATION:

PROTECTIVE GLOVES:

LOCAL EXHAUST: To keep dust below TLV.

MECHANICAL (GENERAL):

SPECIAL:

EYE PROTECTION: SEE SECTION IX-ADDITIONAL COMMENTS

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: SEE SECTION IX - ADDITIONAL COMMENTS.

HORK/HYGIENIC/MAINTENANCE PRACTICES:

You must follow all operator and safety instructions, as well as common safety practices which will reduce the likelihood of severity of physical injury.

SECTION IX - Additional Comments

SECTION I: Protective coatings are applied to the surface of the wire and components are less than 1% of the weight of the product. Typical coatings are petroleum based oils, phosphates, soap based lubricants, flash or wash metallic coatings of tin (stannous) sulphate and/or copper sulphate and indenes.

SECTION VIII: Operators and others in the area (within 50 feet) must wear safety goggles or full face shields worn over safety glasses with side shields along with protective clothing.

WARNING: In normal power brushing operations, the material being removed, such as burrs, scale, dirty metid stage or other residue will fly off the brush with considerable force along with the bursh filaments which break off due to fatigue.

. C. (1960)

Material Safety Data Sheet

for

Calcium Hydroxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900 Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Calcium hydroxide, calcium

dihydroxide, Ca(OH)₂, slaked lime, hydrated lime, lime, milk of lime,

carboxide, caustic lime

Trade Name and Synonyms: Snowflake, Kemilime, Slik

CAS No. 001-305-620

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Data

Calcium hydroxide, Ca (OH)₂: Hydrated lime, is prepared by adding sufficient water to calcium oxide, CaO, to cause complete hydration of the oxide. Impurities are removed from the resulting dry power by air separators.

Chemical Family: Inorganic Base

Molecular Weight: 74.10

Boiling Point: Decomposes to calcium oxide above 580°C Melting Point: (-H₂O) at 580°C; converts to calcium oxide

Vapor Pressure (mm Hg): N/A

Specific Gravity: 2.24

Vapor Density: (Air=1) 0 Evaporation Rate: N/A

Solubility in Water: 0.185 g/100 ml at 0°C

0.077 g/100 ml at 100°C

Appearance and Odor: Soft white powder; odorless

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Hydrated Lime, Ca(OH) ₂	5 mg/m³	5 mg/m³	5 mg/m³

ACGIH American Conference of Governmental Industrial Hygienists

MSHA Mine Safety and Health Administration
OSHA Occupational Safety and Health Administration
PEL Permissible Exposure Limit
TLV Threshold Limit Value
TWA Time Weighted Average

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: NA; UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Section V - Reactivity Data (Cont'd.)

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.5, with water.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. Chronic exposure: Bronchial irritation with chronic cough are common.
- c. First aid: Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. Acute exposure: The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.

Section VI - Health Hazard Data - Cont'd.

First aid: Remove contaminated clothing and shoes c. immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

Eye contact: corrosive

3.

- Acute exposure: Direct contact with the solid or aqueous a. solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
- b. Chronic exposure: Prolonged contact may conjunctivitis.
- First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If inqested, consult a physician immediately.

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture (NFPA 40, HAZARDOUS CHEMICALS DATA, 1975).

Section VIII - Control Measures

Respiratory Protection:

A NIOSH-MSHA approved respirator must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positivepressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Section VIII - Control Measures (Cont'd.)

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

for

Calcium Oxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: Information Telephone Number: (913) 451-8900 (913) 451-8900

Chemical Name and Synonyms: Calcium oxide, CaO, quicklime, lime,

unslaked lime

Trade Name and Synonyms:

Pebble Quicklime, Cal-Max

CAS No. 1305-78-8

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Date

Calcium oxide, "Quicklime", is prepared by heating sized calcium carbonate stone, usually limestone, in kilns heated to greater than 900°C. At this temperature calcium carbonate loses carbon dioxide to form calcium oxide.

Chemical Family: Inorganic Base

Molecular Weight: 56.10 Boiling Point: 5162°C Melting Point: 4737°F. Specific Gravity: 3.2-3.4

Vapor Density: (Air=1) 0 Evaporation Rate: N/A

Solubility in Water: 0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C Appearance and Odor: White granular or powder; faint earthy odor

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Quicklime, CaO	5 mg/m³	2 mg/m³	5 mg/m³

Calcium oxide may contain quartz, free silica. Chronic exposure to the respirable dust of materials containing quartz; e.g., sand and gravel, has caused silicosis.

	ACGIH TLV (TLV-8 hr TWA) mg/m ³	OSHA PEL	MSHA TLV (Adopts 1973 ACGIH TLV)
Quartz, free silica	0.1	0.1*	TLV = 10 % SiO ₂ *+2

*Respirable fraction

ACGIH	American Conference of Governmental Industrial
	Hygienists
MSHA	Mine Safety and Health Administration
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weighted Average

Carties TV .. Bire and Burlanian Warred Date

Section IV - Fire and Explosion Hazard Data

Flash Point: NA; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.5. See Section VII for appropriate precautions.

Section IV - Fire and Explosion Hazard Data - Cont'd.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray, fog or alcohol foam.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Coction V - Posetivity Data

Section V - Reactivity Data

Stability: Unstable; will rapidly hydrate in contact with water with production of heat to form calcium hydroxide.

Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with interhalogens may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. Chronic exposure: Bronchial irritation with chronic cough are common.

Section VI - Health Hazard Data - Cont'd.

c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.
- c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

3. Eye contact: corrosive

- a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
- b. Chronic exposure: Prolonged contact may cause conjunctivitis.
- c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

OSHA regulated: Yes, PEL of 5 mg/m3

Medical conditions generally aggravated by exposure: NA

Section VII - Precautions for Safe Handling and Use

Section VII - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled:

Occupational Spill: Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead

Section VII - Precautions for Safe Handling and Use - Cont'd.

of spill for later disposal.

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.5, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Waste Disposal Methods

- May be used to neutralize acid wastes.
- 2. May be used agriculturally.
- з. Controlled discharge into sewers with sewage plant's approval.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use NIOSH-MSHA approved respirator for protection against dust.

Use gauntlet type work gloves and tight fitting goggles. sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

> This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

for

Calcium Hydroxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900 Information Telephone Number: (913) 451-8900

Calcium hydroxide, calcium Chemical Name and Synonyms:

dihydroxide, Ca(OH)2, slaked lime, hydrated lime, lime, milk of lime,

carboxide, caustic lime

Trade Name and Synonyms: Snowflake, Kemilime, Slik

CAS No. 001-305-620

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Data

Calcium hydroxide, Ca (OH)2: Hydrated lime, is prepared by adding sufficient water to calcium oxide, CaO, to cause complete hydration of the oxide. Impurities are removed from the resulting dry power by air separators.

Chemical Family: Inorga Molecular Weight: 74.10 Chemical Family: Inorganic Base

Boiling Point: Decomposes to calcium oxide above 580°C Melting Point: (-H2O) at 580°C; converts to calcium oxide

Vapor Pressure (mm Hg): N/A

Specific Gravity: 2.24

Vapor Density: (Air=1) 0 Evaporation Rate: N/A

Solubility in Water: 0.185 q/100 ml at 0°C

0.077 g/100 ml at 100°C

Appearance and Odor: Soft white powder; odorless

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Hydrated Lime, Ca(OH) ₂	5 mg/m³	5 mg/m³	5 mg/m³

ACGIH	American Conference of Governmental Industrial Hygienists
MSHA	Mine Safety and Health Administration
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weighted Average

Section IV - Fire and Explosion Hazard Data

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: NA; UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Section V - Reactivity Data (Cont'd.)

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.5, with water.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. Chronic exposure: Bronchial irritation with chronic cough are common.
- c. First aid: Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. Acute exposure: The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.

Section VI - Health Hazard Data - Cont'd.

- c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
 - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
 - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture (NFPA 40, HAZARDOUS CHEMICALS DATA, 1975).

Section VIII - Control Measures

Respiratory Protection:

A NIOSH-MSHA approved respirator must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Section VIII - Control Measures (Cont'd.)

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

for

Calcium Rydroxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900 Information Telephone Number: (913) 451-8900

Informacion relegione number: (313) 431-6300

Chemical Name and Synonyms: Calcium hydroxide, calcium

dihydroxide, Ca(OH)2, slaked lime, hydrated lime, lime, milk of lime,

carboxide, caustic lime

Trade Name and Synonyms: Snowflake, Kemilime, Slik

CAS No. 001-305-620

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Data

Calcium hydroxide, Ca (OH): Hydrated lime, is prepared by adding sufficient water to calcium oxide, CaO, to cause complete hydration of the oxide. Impurities are removed from the resulting dry power by air separators.

Chemical Family: Inorganic Base

Molecular Weight: 74.10

Boiling Point: Decomposes to calcium oxide above 580°C Melting Point: (-H₂O) at 580°C; converts to calcium oxide

Vapor Pressure (mm Hg): N/A

Specific Gravity: 2.24

Vapor Density: (Air=1) 0 Evaporation Rate: N/A

Solubility in Water: 0.185 g/100 ml at 0°C

0.077 g/100 ml at 100°C

Appearance and Odor: Soft white powder; odorless

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Hydrated Lime, Ca(OH) ₂	5 mg/m³	5 mg/m³	5 mg/m³

ACGIH	American Conference of Governmental Industrial Hygienists
MSHA	Mine Safety and Health Administration
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weighted Average

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: NA; UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Section V - Reactivity Data (Cont'd.)

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.5, with water.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

ennessante de la Transa de Carlan Transa

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. Chronic exposure: Bronchial irritation with chronic cough are common.
- c. First aid: Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. Acute exposure: The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.

Section VI - Health Hazard Data - Cont'd.

- First aid: Remove contaminated clothing and shoes C. immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

 Eye contact: corrosive
- 3.
 - Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - Chronic exposure: Prolonged contact may cause b. conjunctivitis.
 - First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- Ingestion: corrosive. If ingested, consult a physician 4 . immediately.

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling: Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture (NFPA 40, HAZARDOUS CHEMICALS DATA, 1975).

Section VIII - Control Measures

Respiratory Protection:

A NIOSH-MSHA approved respirator must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positivepressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Section VIII - Control Measures (Cont'd.)

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

for

Calcium Oxide

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: Information Telephone Number: (913) 451-8900 (913) 451-8900

Chemical Name and Synonyms:

Calcium oxide, CaO, quicklime, lime,

unslaked lime

Trade Name and Synonyms:

Pebble Quicklime, Cal-Max

CAS No. 1305-78-8

Date Prepared/Reviewed: May, 1993

Section II - Chemical and Physical Date

Calcium oxide, "Quicklime", is prepared by heating sized calcium carbonate stone, usually limestone, in kilns heated to greater than 900°C. At this temperature calcium carbonate loses carbon dioxide to form calcium oxide.

Chemical Family: Inorganic Base

Molecular Weight: 56.10 Boiling Point: 5162°C Melting Point: 4737°F. Specific Gravity: 3.2-3.4

Vapor Density: (Air=1) 0 Evaporation Rate: N/A

Solubility in Water: 0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C Appearance and Odor: White granular or powder; faint earthy odor

Section III - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	MSHA TLV
Quicklime, CaO	5 mg/m³	2 mg/m³	5 mg/m³

Calcium oxide may contain quartz, free silica. Chronic exposure to the respirable dust of materials containing quartz; e.g., sand and gravel, has caused silicosis.

	ACGIH TLV (TLV-8 hr TWA) mg/m ³	OSHA PEL	MSHA TLV (Adopts 1973 ACGIH TLV)
Quartz, free silica	0.1	0.1*	TLV = 10 % SiO ₂ *+2

*Respirable fraction

ACGIH	American Conference of Governmental Industrial Hygienists
MSHA	Mine Safety and Health Administration
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weighted Average

Section IV - Fire and Explosion Hazard Data

Flash Point: NA; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.5. See Section VII for appropriate precautions.

Section IV - Fire and Explosion Hazard Data - Cont'd.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray, fog or alcohol foam.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Unstable; will rapidly hydrate in contact with water with production of heat to form calcium hydroxide.

Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with interhalogens may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

1. Inhalation: corrosive

- a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. Chronic exposure: Bronchial irritation with chronic cough are common.

Section VI - Health Hazard Data - Cont'd.

c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.

2. Skin contact: corrosive

- a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.
- c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

3. Eye contact: corrosive

- a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
- b. Chronic exposure: Prolonged contact may cause conjunctivitis.
- c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

OSHA regulated: Yes, PEL of 5 mg/m³

Medical conditions generally aggravated by exposure: NA

Section VII - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled:

Occupational Spill: Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead

Section VII - Precautions for Safe Handling and Use - Cont'd.

of spill for later disposal.

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.5, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Waste Disposal Methods

- 1. May be used to neutralize acid wastes.
- 2. May be used agriculturally.
- 3. Controlled discharge into sewers with sewage plant's approval.

Handling: Use protective equipment as described above in this
section.

<u>Storage:</u> Protect product against physical damage and store in a dry place away from water or moisture.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use NIOSH-MSHA approved respirator for protection against dust.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

MATERIAL SAFETY DATA SHEET

Revision Date: 93-06-04

Original Date: 81-01-23



NO. 149B Page 1

PRODUCT NAME ACCOUNTS AND ADDRESS

Aluminum Co. of America, industrial Chemical Div., P.O. Box 300, Bauxite, AR 72001

Emergency Phone: 412-553-4001

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ...

Chemical Formula: Aluminum Oxide Al₂O₃ • xH₂O

Product Name: Activated Aluminas

Other Designation: F-1, F-20, F-200, HF-200, S-100, S-400, CG-20, OF-2000, Active bed supports.

SRU, PSD-350, RF-200, RC-400.

USA Phones: Chemtrec: 800-424-9300; Health & Safety: 412-553-4649; Product Information: 800-643-8771

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Aluminum oxide CAS No. 1333-84-2 **Exposure Limits**

ACGIH TLV 10 mg/m³

VDICA

% by: Weight 90.0-97.0

OSHA PEL 15, 5 mg/m³ respirable

*Silicon dioxide

0.01-0.2

*Expressed as oxide equivalent

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

No unusual fire or split hazard. Dust may be irritating to eyes and upper respiratory tract. Off-white crystalline or gelatinous granules, pellets, or powder.

Potential Health Effects

EYES: May cause irritation due to desiccant properties.

INHALATION: May cause irritation of upper respiratory tract due to desiccant properties.

This product contains silicates at <1% by weight. Silicates include metal silicates, amorphous and crystalline silica. No analytical method exists to detect and differentiate between amorphous and crystalline silica and other silicates at <1% by weight. Based on the chemistry of bauxite-derived products, crystalline silica is not expected to be present in this product.

Alumina is a low health risk by inhalation and should be treated as a nuisance dust as specified by the American Conference of Governmental Industrial Hygienists (ACGIH).

4. FIRST AID MEASURES

EYES: Flush eyes with plenty of water for at least 15 minutes. If irritation persists, consult a physician.

SKIN: Wash with soap and warm water. If irritation develops, consult a physician.

INHALATION: Remove victim to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.

F35-13203

MATERIAL SAFETY DATA SHEET

Revision Date: 93-06-04

Original Date: 81-01-23

PRODUCT NAME: Activated Aluminas

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: Non-flammable.

Flash Point: None. Flammable Limits: None

AUTO-IGNITION TEMPERATURE: Not applicable. HAZARDOUS COMBUSTION PRODUCTS: None.

EXTINGUISHING MEDIA: Use extinguishing agent applicable to surrounding fire.

FIREFIGHTING INSTRUCTIONS: Firefighters should wear NIOSH approved, positive pressure, self-

contained breathing apparatus and full protective clothing when appropriate.

6. ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: Clean up using dry procedures; avoid dusting.

7. HANDLING AND STORAGE

HANDLING: Avoid contact with eyes. Do not inhale dust.

STORAGE: Keep material dry.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Use with adequate ventilation to meet exposure limits listed in Section 2. RESPIRATORY PROTECTION: NIOSH-approved dust respirator where exposure limit is or may be exceeded.

SKIN PROTECTION: None.

EYE PROTECTION: Safety glasses recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Off-white, crystalline or gelatinous granules, pellets/powder.

BOILING POINT: Not applicable

FREEZE-MELT POINT: 3700°F (2038°C)
VAPOR PRESSURE (mm): Not applicable
VAPOR DENSITY (air=1): Not applicable

SOLUBILITY IN WATER: Insoluble; soluble in concentrated acids and alkalies.

SPECIFIC GRAVITY: 3.2

DENSITY: Loose Bulk: 39-52 lb/ft3 (0.62-0.83 g/cm3).

pH: ~10 (20% slurry solution)

ODOR: None

ODOR THRESHOLD (ppm): Not applicable

COEFFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable

F35-13203

NO. 1498 Page 2

NO. 149B Page 3

MATERIAL SAFETY DATA SHEET

Revision Date: 93-06-04

Original Date: 81-01-23

PRODUCT NAME: Activated Aluminas

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY (CONDITIONS TO AVOID): Avoid water.

INCOMPATIBILITY: None.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: None.

Generates heat with water.

Non-corrosive.

11. TOXICOLOGICAL INFORMATION

No LD_{50} or LC_{50} found for oral, dermal or inhalation routes of administration.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL /CHEMICAL FATE INFORMATION: Not available.

13. DISPOSAL CONSIDERATION

Collect in containers, bags, or covered dumpster boxes. If reuse or recycling is not possible, material may be disposed of at a sanitary landfill.

TCLP data are available.

RCRA Hazardous Waste No.: Not federally regulated.

14. TRANSPORT INFORMATION

Not regulated by U.S.A. DOT. Canadian TDG Hazard Class & PIN – Not regulated.

15. REGULATORY INFORMATION

For inventory reporting purposes, CAS No. 1344–28–1 was assigned for aluminum hydroxide and activated alumina products instead of the CAS number indicated in Section 2.

This material does not contain nor was it manufactured using exone-depleting chemicals.

U.S. FEDERAL REGULATIONS:

TSCA STATUS:

On Toxic Substances Control Act Inventory.

CERCLA REPORTABLE QUANTITY: None.

MATERIAL SAFETY DATA SHEET

Revision Date: 93-06-04

Original Date: 81-01-23

Page 4

PRODUCT NAME: Activated Aluminas

SARA TITLE III:

Section 302 Extremely Hazardous Substances:

Section 311/312 Hazardous Categories:

Section 313 Toxic Chemicals:

None.

Immediate (Acute).

None.

RCRA STATUS:

Not regulated.

INTERNATIONAL REGULATIONS:

CANADIAN WHMIS: Listed on Domestic Substances List.

EINECS: All components of this product are on the European Inventory of Existing Commercial Chemical

Substances.

16. OTHER INFORMATION

MSDS Status: New format.

Product Use: Absorbent; dehydration agent; catalyst support. Prepared by the Hazardous Materials Control Committee.

REFERENCES:

American Industrial Hygiene Association (AIHA) Hygienic Guide Series, June 1978 Edition.

- U.S. Dept. of Health and Human Services, NIOSH: Registry of Toxic Effects of Chemical Substances. 1985-86 Edition.
- Sax, N. Irving: Dangerous Properties of Industrial Materials, Van Nostrand Reinhold Co., Inc., 1984. American Conference of Governmental Industrial Hygienists, Inc. (ACGIH), Documentation of the Threshold Limit Values and Biological Exposure Indices, Sixth Edition, 1992.

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied can be made.

Material Safety Data Sheet

for

Calcium Carbonate

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: Information Telephone Number:

(913) 451-8900 (913) 451-8900

Substance: Calcium Carbonate, Calcite, CaCO, Ground Limestone (CAS No. 471-34-1), Ash Grove Grid Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: Ca-C-O₃

Revision Date: June, 1993

Section II - Hazardous Ingredients/Identity Information

Calcium Carbonate

CACO. Nuisance particulate: OSHA Pel

Total dust, 15 mg/m³

ACGIH TLV

 10 mg/m^3

Respirable fraction 5 mg/m3*

*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

Calcium carbonate may contain quartz as an impurity. The OSHA PEL for quartz, crystalline silica, is 0.1 mg/m³, respirable dust only.

Quartz an OSHA carcinogen: No By NTP: Yes By IARC: Yes

Section III - Physical/Chemical Characteristics

Boiling Point: NA* Specific Gravity: 2.710
Vapor Pressure(mm Hg): 0 Melting Point: Decomposes 900°C
Vapor Density: (Air=1) NA Evaporation Rate: NA

Solubility in Water: .0014% (25°C)

Appearance and Odor: White powder or granules; no odor

*NA = Not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA

Flammable or Explosive Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; eyes
Acute exposure: No known effects

Chronic exposure: No known

First aid: Eyes - treat as any inert foreign object

OSHA Regulated: Yes - SEE OSHA PEL in Section II

Medical Conditions Generally Aggravated by Exposure: Any preexisting lung disease, such as emphysema or tuberculosis.

Nuisance dust, unless the airborne product contains > 1% crystalline silica (quartz), is a simple mechanical irritant to eyes, skin and upper respiratory system. Exposure to respirable quartz without use of a respirator can result in silicosis. The usually form is chronic resulting from long term exposure to respirable quartz.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

In dusty environments, the use of a MSHA/NIOSH approved respirator for particulates is recommended.

Firefighting: NA

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

> This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet

fòr

Calcium Carbonate

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: Information Telephone Number: (913) 451-8900 (913) 451-8900

Substance: Calcium Carbonate, Calcite, CaCO, Ground Limestone (CAS No. 471-34-1), Ash Grove Grid Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family: Carbonate; weak inorganic base

Molecular Formula: Ca-C-O,

Revision Date: June, 1993

Section II - Hazardous Ingredients/Identity Information

Calcium Carbonate

CACO. Nuisance particulate: OSHA Pel

ACGIH TLV

Total dust, 15 mg/m³

 10 mg/m^3

Respirable fraction 5 mg/m3*

*Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

Calcium carbonate may contain quartz as an impurity. The OSHA PEL for quartz, crystalline silica, is 0.1 mg/m3, respirable dust only.

Quartz an OSHA carcinogen: No

By NTP: Yes By IARC: Yes

Section III - Physical/Chemical Characteristics

Boiling Point: NA* Specific Gravity: 2.710
Vapor Pressure(mm Hg): 0 Melting Point: Decomposes 900°C
Vapor Density: (Air=1) NA Evaporation Rate: NA

Solubility in Water: .0014% (25°C)

Appearance and Odor: White powder or granules; no odor

*NA = Not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA

Flammable or Explosive Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation; eyes Acute exposure: No known effects

Chronic exposure: No known

First aid: Eyes - treat as any inert foreign object

OSHA Regulated: Yes - SEE OSHA PEL in Section II

Medical Conditions Generally Aggravated by Exposure: Any preexisting lung disease, such as emphysema or tuberculosis.

Nuisance dust, unless the airborne product contains > 1% crystalline silica (quartz), is a simple mechanical irritant to eyes, skin and upper respiratory system. Exposure to respirable quartz without use of a respirator can result in silicosis. The usually form is chronic resulting from long term exposure to respirable quartz.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

<u>Storing:</u> Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respirator: In dusty environments, the use of a MSHA/NIOSH approved respirator for particulates is recommended.

Firefighting: NA

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Preparation: 7/1/93

HEALTH - 1 FLAMMABILITY - 1 . REACTIVITY - 1

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC #500 H. Temperature Red

PRODUCT APPEARANCE: Red, Paste like, with Acidic Acid odor.

CHEMICAL NAME: ACETOXYSILANE DOT HAZARD CLASSIFICATION: N/A **EMERGENCY TELEPHONE NUMBERS**

1-800-535-5053

INFOTRAC

1-708-231-5600

POLYGEM, INC.

SECTION 2 - HAZARDOUS INGREDIENTS

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT ACETOXYSILANE CAS#

T/S

PEL/TLV-TWA

<u>STEL-TWA</u>

N/E

N/E

N/E Not Established

T/S - Trade Secret

S Skin

ere the hazardous component(s) as defined in 49 CFR 172 and 29 CFR 1910 which are present in this product and all compo

SECTION 3 - PHYSICALICHEMICAL CHARACTERISTICS

The following data represent approximate or typical values. They do not constitute product specifications

BOILING RANGE: > 300 F

MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE

VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

EVAPORATION RATE: LESS THAN 1 WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: > 250 F

LOWER FLAMMABILITY LIMIT: N/A

TEST METHOD: SETAFLASH CLOSED CUP

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

NONE KNOWN TO POLYGEM, INC.

SECTION 5 - REACTIVITY DATA

BILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATABILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acedic Acid vapors are formed

SECTION 6 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

INHALATION: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

EYE CONTACT: May cause eye irritation on prolonged or repeated exposure.

SKIN CONTACT: May cause skin imitation on prolonged or repeated exposure.

SKIN ABSORPTION: May cause skin irritation on prolonged or repeated exposure

INGESTION: Do not take internally. May cause burns of mouth and throat.

CHRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES:

EYES: Flush with plenty of water and get medical attention. Keep eye fids apart. Wash within 1 minute of contact for maximum results,

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air

INGESTION: If large amounts are swallowed, include vormitting. Seek medical attention. May cause burns of mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

CARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA

SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection

WASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations

For further information, contact: EPA - RCRA Hotline (1-800-424-9346)

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION:

Local exhaust and general ventilation recommended,

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure

EYE PROTECTION:

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing

SECTION 9 - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes.

SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION

REGULATORY INFORMATION:

N/A

SARA HAZARD CLASSIFICATION:

SARA Title III regulations (40 CFR 370). N/A

SARA SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372

DOT PROPER SHIPPING NAME

SILICONE

UN NUMBER

N/A

This information is furnished without warranty, representation inducement or licence of any kind, except that is accurate to the best of Polygem, Inc. Knowledge, or obtained from sources believed by Polygem. Inc. to be accurate, and Polygem, Inc. does not assure only legal responsibility for use or reliance upon the same. Customers are encouraged to conduct their own tests. Before using any product, read it's label.



MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Preparation;

7/1/93

HEALTH - 1 FLAMMABILITY - 1 &

REACTIVITY - 1

OTHER - N/A

PRODUCT NAME: FOLYBAC =600 (COLORS)

PRODUCT APPEARANCE: Paste like, various colors, Acidic Acid odor.

CHEMICAL NAME: ACETOXYSILANE

DOT HAZARD CLASSIFICATION: N/A

EMERGENCY TELEPHONE NUMBERS

1-800-535-5053 -

INFOTRAC

1-708-231-5600

POLYGEM, INC.

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT ACETOXYSILANE CAS.#

N/E - Not Established

T/S

PEL/TLV-TWA N/E

STEL-TWA

N/E

T/S - Trade Secret

that are defined in 40 CFR 172 and 29 CFR 1010 which are present in this product a

eelh (yio) eiste ein varoitaise eels

The following data represent approximate or typical values. They do not constitute product specifications.

BOILING RANGE: > 300 F

MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE

VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

EVAPORATION RATE: LESS THAN 1

WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA:

FLASH POINT: > 250 F

TEST METHOD: SETAFLASH CLOSED CUP

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

LOWER FLAMMABILITY LIMIT: N/A

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS. REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

NONE KNOWN TO POLYGEM, INC.

TABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATABILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acedic Acid vapors are formed.

SECTION 6 - HEALTH HAZARD DATA

FECTS OF OVEREXPOSURE

ON: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

E CONTACT: May cause eye imitation on prolonged or repeated exposure.

IN CONTACT: May cause skin imitation on prolonged or repeated exposure.

IN ABSORPTION: May cause skin irritation on prolonged or repeated exposure

SESTION: Do not take internally. May cause burns of mouth and throat.

IRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

IERGENCY & FIRST AID PROCEDURES:

ES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

IN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

HALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

BESTION: If large amounts are swallowed, induce vommitting. Seek medical attention. May cause burns of mouth and throat.

IMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

RRCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 7-SPILL OR LEAK PROCEDURES

EPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection

ASTE DISPOSAL METHOD:

incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA Hotline (1-800-424-9346).

SECTION 8 - SPECIAL PROTECTION INFORMATION

SPIRATORY PROTECTION:

I'd be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

N'. ,TON:

Local exhaust and general ventilation recommended.

IOTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure

E PROTECTION:

Chemical splash goggles.

HER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing

SECTION 9 - SPECIAL PRECAUTIONS

ECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or furnes.

ECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION

GULATORY INFORMATION:

N/A

RA HAZARO CLASSIFICATION:

SARA Title III regulations (40 CFR 370): N/A

RA SECTION 313 LISTED INGREDIENTS:

- material does not contain any substance which is subject to the reporting requirements of 40 CFR 372
- IT . ER SHIPPING NAME:

SILICONE

INUMBER:

N/A

s information is furnished without warranty, representation inducement or licence of any kind, except that is accurate to the best of Polygem, Inc., knowledge, or obtained from inces believed by Polygem, Inc. to be accurate, and Polygem, Inc. does not assure any legal responsibility for use or reliance upon the same. Customers are encouraged to conduct in own tests. Before using any product, read it's label.

VAN MATERS & ROGERS INC.

MAINERAME UPLOAD DATE: 07/01/93

MATERIAL SAFETY DATA SHEET

VERSION: 002

PAGE: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055 PROD NO : 279390

LFL: Not applicable UFL: Not applicable

EXTINGUISHING MEDIA: Non-flammable.

FIRE & EXPLOSION HAZARDS: Hydrochloric acid itself is nonflammable. There is, however, a latent fire or explosion hazard due to hydrogen gas generated when acid is in contact with metals.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained breathing apparatus.

REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Contact with metals may cause generation of flammable concentrations of hydrogen gas.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Avoid base and corrosive materials. Avoid contact with most metals. Avoid oxidizing material, can oxidize to chlorine.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small quantities may be flushed with copious quantities of water; in case of larger amounts, contain liquid. Use limestone, lime or soda ash to cautiously neutralize since considerable amounts of heat and steam may be generated on neutralization.

DISPOSAL METHOD: Contact The Dow Chemical Company for further instructions.

HEALTH HAZARD DATA: 6.

EYE: May cause pain, lachrymation (tears), and severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.

SKIN CONTACT: Short single exposure may cause severe skin burns.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LOSO has not been determined.

REPORT NUMBER: 703 VAN WATERS & ROGERS INC.
MODE NO. 0740500 MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 07/01/93

VERSION: 002

PAGE: 001

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055 PROD NO : 279390

ASH GROVE CEMENT 13939 N. RIVERGATE BLVD P 0 BOX 03007

PORTLAND , OR 97203

VAN WATERS & ROGERS INC. , A ROYAL PAKHOED COMPANY (425)889-3400 6100 CARILLON POINT , KIRKLAND , WA 98033

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC (800)424-9300

PRODUCT NAME:

HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

MSDS #: DZ40500

INGREDIENTS: (% ω/ω, unless otherwise noted)

Hydrogen chloride

CAS# 007647-01-0 CAS# 007732-18-5

31.5%

Water

Balance

2. PHYSICAL DATA:

BOILING POINT: 178F (81.5C)

VAP PRESS: 25 mmHg, 3.3 kpa @ 200

UAP DENSITY: (Air=1) 11.0

SOL, IN WATER: Infinite.

SP. GRAVITY: 1,16

APPEARANCE: White to yellow clear liquid.

ODOUR: A pungent odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None METHOD USED: TCC

FLAMMABLE LIMITS

VAN WATERS & ROGERS INC.
MATERIAL SAFETY DATA SHEET

MAINERAME UPLOAD DATE: 07/01/93

VERSION: 002

PAGE: 003

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055 PROD NO: 279390

INGESTION: Ingestion may cause gastrointestinal irritation or ulceration and severe burns of the mouth and throat.

INHALATION: Excessive vapor concentrations are readily attainable and may cause serious adverse effects, even death. Excessive exposure may cause severe irritation and injury to upper respiratory tract and lungs.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposure may cause erosion of teeth and bleeding and ulceration of nose, mouth and gums. Did not cause cancer in long-term animal studies.

FIRST AID:

EYES: Immediate and continuous irrigation with flowing water at least 30 minutes is imperative. Prompt medical consultation is essential.

SKIN: Immediate continued and thorough washing in flowing water for 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INHALATION: Remove to fresh air. If not breathing, give mouth to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: Corrosive. May cause stricture. If lavage is performed, suggest endotracheal and/or esophagoscopic control. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the paitient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIH TLV and OSHA PEL are 5 ppm ceiling.

VENTILATION: Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator. For emergency and other conditions where the

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

MAINFRAME UPLOAD DATE: 07/01/93

VERSION: 002

PAGE: 004

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055 PROD NO: 279390

exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Safety shower should be located in immediate work area. Wash contaminated clothing before reuse. Dispose of contaminated shoes,

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye irritation, use a full-face respirator. Wear a face-shield which allows use of chemical goggles, or a full-face respirator, to protect face and eyes when there is any likelihood of splashes. Eye wash fountain and safety shower should be located in immediate work area.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Prevent all contact with eyes and skin. Avoid breathing irritating vapors.

MSDS STATUS: Revised section 9 and regsheet.

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented).

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION	
HYDROCHLORIC ACID	007647-01-0	32	%

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET PAGE: 005

MAINFRAME UPLOAD DATE: 07/01/93

VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055 PROD NO: 279390

SARA HAZARU CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard A delayed health hazard

CANADIAN REGULATIONS

The Torkplace Hazardous Materials Information System (W.H.M.I.S.) Clasification for this product is:

DIA E

The Transportation of Dangerous Goods Act (T.D.G.A.) classification for this product is:

Hydrochloric Acid/Class 8, (9.2)/UN1789/II/ERP2-0011

Appendix33-001204

MAJMERAME UPLOAD DATE: 07/01/93

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

TERIAL SAFETY DATA SHEET VERSION: 002

PRODUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 419055 PROD NO : 279390

PAGE: 006

FOR ADDITIONAL INFORMATION -----

CONTACT: MSDS COORDINATOR VAN WATERS & ROGERS INC.

DURING BUSINESS HOURS, PACIFIC TIME (425)889-3400

10/15/97 16:39 PROBUCT: 279390 CUST NO: 107510 ORDER NO: 419055

NOTICE ----

** VAN WATERS & ROGERS INC. ("VW&R"), A ROYAL PAKHOED COMPANY, EXPRESSLY

DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR

A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED

HEREIN, AND SHALL UNDER NO CIRCUMSTANCES BE LIABLE FOR INCIDENTAL OR

CONSEQUENTIAL DAMGAGES. **

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&RS CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

* * * END OF MSDS * * *

VAN WATERS & ROBERS INC. MATERIAL SAFETY DATA SHEET

EF? STIVE DATE: 07/01/93

PASE: 001

VERSION: 002

PROJUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043 PROD NO : 279390

ASH GROVE CEMENT 13939 N. RIVERGATE BLVD

PORTLAND , OR 97203

VAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400 6100 CARILLON POINT , KIRKLAND , WA 98033

------EMERGENCY ASSISTANCE

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMIREC (800)424-9300

------------------------FOR PRODUCT AND SALES INFORMATION ----------------------

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE AT 503-222-1721 PORTLAND , OR UMAR PORTLAND

PRODUCT NAME:

HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

MSDS #: DZ40500

1. INGREDIENTS: (% w/w, unless otherwise noted)

CAS# 007647-01-0 CAS# 007732-18-5 31,5% Hydrogen chloride Water Balance

2. PHYSICAL DATA:

BOILING POINT: 178F (81,50) VAP PRESS: 25 mmHg, 3.3 kpa @ 200 VAP DENSITY: (Air=1) 11.0 SOL. IN WATER: Infinite. SP. GRAVITY: 1.16 APPEARANCE: White to yellow clear liquid.

ODOUR: A pungent odor.

TIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None METHOD USED: TCC

FLAMMABLE LIMITS

VAN WATERS & ROGERS INC. MA:ERIAL SAFETY DATA SHEET PAGE: 002

EFT TOTIVE DATE: 07/01/93

VERSION: 002

PR-JUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043 PROD NO: 279390

LFL: Not applicable UFL: Not applicable

EXTINGUISHING MEDIA: Non-flammable.

FIRE & EXPLOSION HAZARDS: Hydrochloric acid itself is non-flammable. There is, however, a latent fire or explosion hazard due to hydrogen gas generated when acid is in contact with metals.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Contact with metals may cause generation of flammable concentrations of hydrogen gas.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Avoid base and corrosive materials. Avoid contact with most metals. Avoid exidizing material, can exidize to chlorine.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

HAZARDOUS POLYMERIZATION: Will not occur,

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small quantities may be flushed with copious quantities of water; in case of larger amounts, contain liquid. Use limestone, lime or soda ash to cautiously reutralize since considerable amounts of heat and steam may be generated on neutralization.

DISPOSAL METHOD: Contact The Dow Chemical Company for further instructions.

6. HEALTH HAZARD DATA:

EYE: May cause pain, lachrymation (tears), and severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.

SKIN CONTACT: Short single exposure may cause severe skin burns.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in barmful amounts. The dermal LDSO has not been determined.

EFF TOTIVE DATE: 07/01/93

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

PAGE: 003

VERSION: 002

PR-UCT: HYDROCHLORIC ACTD, TECHNICAL 20 BAGME'

ORDER NO: 317043 PROD NO : 279390

INGESTION: Ingestion may cause gastrointestinal irritation or ulceration and severe burns of the mouth and throat.

INHALATION: Excessive vapor concentrations are readily attainable and may cause serious adverse effects, even death. Excessive exposure may cause severe irritation and injury to upper respiratory tract and lungs.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposure may cause erosion of teeth and bleeding and ulceration of nose, mouth and gums. Did not cause cancer in long-term animal studies.

7. FIRST AID:

EYES: Immediate and continuous irrigation with flowing water at least 30 minutes is imperative. Prompt medical consultation is essential.

SKIN: Immediate continued and thorough washing in flowing water for 30 minutes is imperative while removing contaminated clothing. Prompt medical consultation is essential.

INGESTION: Do not induce vomiting. Give large amounts of water or milk if available and transport to medical facility.

INMALATION: Remove to fresh air. If not breathing, give mouthto-mouth resuscitation. If breathing is difficult, give exygen, Call a physician.

NOTE TO PHYSICIAN: Corrosive. May cause stricture. If lavage is performed, suggest endotracheal and/or esophagoscopic centrol. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the paitient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIMITLY and OSMA PEL are 5 ppm ceiling.

VENTILATION: Control airborne concentrations below the exposure guideline. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator. For emergency and other conditions where the

VAN WATERS & ROGERS INC. MATERIAL SAFETY BATA SHEET PAGE: 004

VERSION: 002

EECTOTIVE DATE: 07/01/93

PR-SUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043 PROD NO: 279390

exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Safety shower should be located in immediate work area. Wash contaminated clothing before reuse. Dispose of contaminated shoes.

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye irritation, use a full-face respirator. Wear a face-shield which allows use of chemical goggles, or a full-face respirator, to protect face and eyes when there is any likelihood of splashes. Eye wash fountain and safety shower should be located in immediate work area.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Prevent all contact with eyes and skin. Avoid breathing irritating vapors.

MS6S STATUS: Revised section 7 and regsheet.

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented).

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSO Sheet for health and safety information.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Pa 1 372:

SHEMICAL NAME	CAS NUMBER	CONCENTRATION
	mak are real real abilities a to 1500 at the other	** ** ** ** ** ** ** ** ** ** ** ** **
HYDROCHLORIC ACTD	007647-01-0	32 %

REPORT NUMBER: 703 MSDS NO: DZ40500 SETICTIVE DATE: 07/01/93 VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET FAGE: 005

VERSION: 002

PRESUCT: HYDROCHLORIC ACID, TECHNICAL 20 BAUME'

ORDER NO: 317043 PROD NO: 279390

SARA HAZARS CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard A delayed health hazard

CANADIAN REGULATIONS

From Jorkplace Hazardous Materials Information System (W.H.M.I.S.) institution for this product is:

DIA E

The Transportation of Dangerous Goods Act (T.D.G.A.) classification for this product is:

Hydrocbloric Acid/Class 8, (9.2)/GN1789/II/ERP2-0011

Appendix33-001210

VAN WATERS & ROOERS INC. MATERIAL SAFETY DATA SHEET

FAGE: 004

VERSION: 002

EF GTIVE DATE: 07/01/93

PRECIET: HYDROCHLORIC ACTD, TECHNICAL 20 BAUME'

	RDER NO: 317043 ROD NO: 279390
FOR ADDITIONAL INFORMATION	
CONTACT: MSDS COORDINATUR VW&R PORTLAND DURING BUSINESS HOURS, PACIFIC TIME (206)8	89-3400
03/06/95 14:15 PRODUCT: 279390 CUST NO: 107510	CROER NO: 317043
NOTICE	
** VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL	EXPRESS OR
IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PART	ICULAR PURPOSE,
WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN, I	AND SHALL UNDER
NO CIRCUMSTANCES BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL D	AMAGES.**

ALL IMPORMATION APPEARING MEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&RS CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, MANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE UF, OR RELIANCE UPON, INFORMATION CONTAINED MEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED MEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

*** ENDOFMSDS ***



MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

HEALTH - 1 FLAMMABILITY - 1

REACTIVITY - 1

OTHER - N/A

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC =500 (COLORS)

PRODUCT APPEARANCE: Paste like, various colors, Acidic Acid odor.

CHEMICAL NAME: ACETOXYSILANE

DOT HAZARD CLASSIFICATION: N/A

EMERGENCY TELEPHONE NUMBERS

1-800-535-5053 - INFOTRAC

1-708-231-5600

POLYGEM, INC.

Section 22: Azzaridiojus in Griedienes

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT ACETOXYSILANE CAS#

PEL/TLV-TWA

STEL-TWA

N/F

N/E - Not Established

T/S - Trade Secret

down companiently our defined in 66 CFR 172 and 25 CFR 1816 which are present in 1846 product and at companients which appear on the base

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

The following data represent approximate or typical values. They do not constitute product specifications,

BOILING RANGE: > 300 F MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

EVAPORATION RATE: LESS THAN 1 WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: > 250 F

TEST METHOD: SETAFLASH CLOSED CUP

LOWER FLAMMABILITY LIMIT: N/A

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DICIXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS. REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

NONE KNOWN TO POLYGEM, INC.

SECTION 5 - REACTIVITY DATA

TABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATABILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acedic Acid vapors are formed.

SECTION 6 - HEALTH HAZARD DATA

FECTS OF OVEREXPOSURE:

HALATION: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

Æ CONTACT: May cause eye imitation on prolonged or repeated exposure.

(IN CONTACT: May cause skin imitation on prolonged or repeated exposure.

GN ABISORPTION: May cause skin irritation on prolonged or repeated exposure.

GESTION: Do not take internally. May cause burns of mouth and throat.

IRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

AERGENCY & FIRST AID PROCEDURES:

ES. Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

(IN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Accention should be paid to hair, nose and eyes.

HALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

GESTION: If large amounts are swallowed, induce vommitting. Seek medical attention. May cause burns of mouth and throat.

HMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

ARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES

TEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection.

ASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA Hotline (1-800-424-9346).

SECTION 8-SPECIAL PROTECTION INFORMATION

SPIRATORY PROTECTION:

Should be write to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type

NTILATION:

Local exhaust and general ventilation recommended.

OTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

E PROTECTION:

Chemical splash goggles.

HER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing

SECTION 9. SPECIAL PRECAUTIONS

ECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

This material may cause sensitization. Do not get in eyes, on skin or clothing. On not allow clothing to contact skin. Avoid contact with vapors or fumes.

ECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION

QUEATORY INFORMATION:

N/A

RA HAZARD CLASSIFICATION:

SARA Title III regulations (40 CFR 370): N/A

RAISECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

T PROPER SHIPPING NAME:

SILICONE

NUMBER.

N/A

information is furnished without warranty, representation inducement or licence of any kind, except that is accurate to the best of Polygem, Inc. knowledge, or obtained from ces believed by Polygem, Inc. to be accurate, and Polygem, Inc. does not assure any legal responsibility for use or reliance upon the same. Customers are encouraged to conduct own tests. Before using any product, read it's label.



MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Preparation: 7/1/93

HEALTH - 1 FLAMMABILITY - 1

REACTIVITY - 1

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC =500 (COLORS)

PRODUCT APPEARANCE: Paste like, various colors, Acidic Acid odor.

1-800-535-5053 - INFOTRAC

EMERGENCY TELEPHONE NUMBERS

CHEMICAL NAME: ACETOXYSILANE

DOT HAZARD CLASSIFICATION: N/A

1-708-231-5600

POLYGEM, INC.

Secretor 22 Azardous ingredients

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT

CAS #

PEL/TLV-TWA

ACETOXYSILANE

N/E - Not Established

T/S - Trade Secret

nt(c) as defined in 40 CFR 172 and 29 CFR 1910 which are grassent in this product and all com

SECHON3#PHYSICAL/CHEMICAL/CHAHACIEHSI(C

The following data represent approximate or typical values. They do not constitute product specifications.

BOILING RANGE: > 300 F

MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE

VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

EVAPORATION RATE: LESS THAN 1

WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4-FIRE AND EXPLOSION DATA

FLASH POINT: > 250 F

TEST METHOD: SETAFLASH CLOSED CUP

LOWER FLAMMABILITY LIMIT: N/A

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS. REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID): NONE KNOWN TO POLYGEM, INC.

SECTION 5 - REACTIVITY DATA

__ABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATABILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acedic Acid vapors are formed.

SECTION 6 - HEALTH MAZARD DATA

EFFECTS OF OVEREXPOSURE:

INHALATION: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

EYE CONTACT: May cause eye imitation on prolonged or repeated exposure.

SKIN CONTACT: May cause skin imitation on prolonged or repeated exposure.

SKIN ABSORPTION: May cause skin irritation on prolonged or repeated exposure.

INGESTION: Do not take internally. May cause burns of mouth and throat.

CHRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES:

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce voruniting. Seek medical exention. May cause burns of mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

CARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a careinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection.

WASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA Hotline (1-800-424-9346).

SECTION 8-SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION:

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION:

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing.

SECTION 9 - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or furnes.

SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes, Avoid breathing vapor, Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION 10 - SUPPLEMENTAL INFORMATION

REGULATORY INFORMATION:

N/A

SARA HAZARD CLASSIFICATION:

SARA Title III regulations (40 CFR 370): N/A

SARA SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

DOT PROPER SHIPPING NAME:

SILICONE

UN NUMBER:

N/A

This information is furnished without warranty, representation inducement or licence of any kind, except that is accurate to the best of Polygem, Inc. knowledge, or obtained from sources believed by Polygem, Inc. to be accurate, and Polygem, Inc. does not assure any legal responsibility for use or reliance upon the same. Customers are encouraged to conduct their own tests. Before using any product, read it's label.

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203 503-286-1677 • FAX: 289-2272

VENDOR: 00712920

ATTN ORDER DESK POLYGEM INCORPORATED

P. O. BOX 609

WEST CHICAGO, IL 60186-0609 **PURCHASE ORDER NO.**

89510242

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
 Show purchase order number on invoice, shipping notice and container label.
- . Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

- ONDEN	110.
Date Issued	7/28/95
Date Required	8/11/95
Terms	NET 30
Via	U.P.S.
Freight Terms	PRE-PAY & ADD

This order is a confirmation in not a confirmation Half of

Item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	48	EACH	SILICONE ADHESIVE SEALANT(CLEAR), POLYBAC (CARTRIDGE = 10.3 fl. oz.) END			00-00-0420-0008	3.72
			Supplier #: POLYBAC # 500 CLEAR * M.S.D.S. REQUIRED *	OEM: 500			·
***	·		** ORIGINAL ORDER **				
*	. @* F		(Par Inv + 21169 8/14/95)				
	<u> </u>			ADDROVAL		DE CICNED TO BE VALID	

APPROVAL

FROM : Panasonic TAD/FAX

المراجع والمطالع المتحاج وجويو ويطاوه

Page 1

MATERIAL SAPETY DATA SERET

MSDE NO CODE: 0023

Revision Date: 07/30/93

DEMNISON DIVISION, AVERY-DEPONISON INC.

Last Issue Date: 02/21/92

1 Clark EL11

Talephone Number: 508/879-0511,14711

Framingham, NA 01701

EMERGENCY MEDICAL TELEPHONE NUMBER: 508/879-0511,14616

SECTION I PRODUCT IDENTIFICATION

Avery-Decaison Identity: STAMP PAD INC.

SECTION II EAGARDOUS INGREDIENTS/IDENTITY INFORMATION

OSEA.PEL ACGIE.TLY

Material Mamo

CAS # 107-21-1

ppm ppm 50 PPM . 50 PPK

All of the chemicals listed above are in compliance with OSEA, CFR, 1910.1200. A finished stamp pad constains a substantially lower percentage by weight of each chemical and has the ink held within an absorbent material.

SECTION III PHYSICAL DATA

Reiling Point: 368 P

Appearance: Liquid-ColoRED

pocific Gravity: 1.04 \$ 200

Oder: MILD ODOR

Vapor Preseure (malg): 0.22 # 200

Water Selubility: COMPLEXE

Vapor Deseity(Airwi): R/AF

Evaporation Rate (Butyl Acetate=1): < 0.01

Melting Point: W/AP

SECTION IV FIRE AND EXPLOSION BASARD DATA

Plack Point: 225 P

Notland Used: PMCC

Plannable Limits: N/AP

Extinguishing Medie: FOAM, CARBON DIGITE, DAY CHIMICAL

Fire Fighting Procedure: WEAR SELF-CONTRIBUTED ARRATEING APPARATUS, USE WATER SPRAY TO

COOL HEARSY CONTAINERS

Unusual Bazards: NOME

SECTION Y REACTIVITY DATA

Stability: THO

Conditions to avoid: E/AF

N/A - Not Applicable

Incompatibility: STRONG CRIDITING AGENTS

Materdous Decompostion: MAY FORM TODIC MATERIALS, CARBON DIGIDS OR CARBON MONORIDE

Easardous Polymerisation: WILL NOT COOUR

SECTION VI REALTH EASAND DATA

Symptoms of overexposure for each potential reute of exposure:___

Inheled: NO SYMPTOMS EXPECTED

sys Contact: MAT CAUSE BYE INDITATION

#/S - Not Betablished

Porm Madual



MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of Preparation:

HEALTH - 1 FLAMMABILITY - 1

REACTIVITY - 1

OTHER - N/A

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC =500 (COLORS)

PRODUCT APPEARANCE: Paste like, various colors, Acidic Acid odor.

CHEMICAL NAME: ACETOXYSILANE DOT HAZARD CLASSIFICATION: N/A **EMERGENCY TELEPHONE NUMBERS**

1-800-535-5053

INFOTRAC

1-708-231-5600

POLYGEM, INC.

Section Design Avariations in equation is

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT ACETOXYSILANE CAS#

PEL/TLV-TWA

STEL-TWA

N/E

T/S

N/E - Not Established

T/S - Trade Secret

S - Skin

efet as defined in 40 CFR 172 and 20 CFR 1910 which are present in this pa

SECTIONS #PHYSICAL/CHEMIL/ALECHAHAG/FEHIS

The following data represent approximate or typical values. They do not constitute product specifications;

BOILING RANGE: > 300 F

MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE

VAPOR PRESSURE (mm Hg): LESS THAN 5 MM

EVAPORATION RATE: LESS THAN 1

WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: > 250 F

TEST METHOD: SETAFLASH CLOSED CUP

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

LOWER FLAMMABILITY LIMIT: N/A

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS. REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

NONE KNOWN TO POLYGEM, INC.

SECTION 5—REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

INCOMPATABILITY: Oxidizing material can cause a reaction.

HAZARDOUS DECOMPOSITION PRODUCTS: Silicone dioxide, Carbon dioxide, traces of unburned carbon.

CONDITIONS TO AVOID: Air or moisture causes polymerization. Acedic Acid vapors are formed.

SECTION 6 HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE:

INHALATION: May cause irritation to upper respiratory tract. Avoid prolonged or repeated inhalation.

EYE CONTACT: May cause eye irritation on prolonged or repeated exposure.

SKIN CONTACT: May cause skin imitation on prolonged or repeated exposure.

SKIN ABSORPTION: May cause skin irritation on prolonged or repeated exposure.

INGESTION: Do not take internally. May cause burns of mouth and throat.

CHRONIC EFFECTS OF OVEREXPOSURE: Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES:

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results.

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

.Attention should be paid to hair, nose and eyes.

INHALATION: In case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce voramiting. Seek medical attention. May cause burns of mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact.

CARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

SECTION 74 SPILL OR LEAK PROCEDURES ...

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container. For large spills, dike area and pump into closed containers. Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection,

WASTE DISPOSAL METHOD:

Incinerate or use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA Hotline (1-800-424-9346).

SECTION 85/SPECIAL PROTECTION IN FORMATION

RESPIRATORY PROTECTION:

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type.

VENTILATION:

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION:

Chemical splash goggles,

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing.

SECTION 98 SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes,

SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light. Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately. Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

SECTION TO RESUPPLEMENTAR INFORMATION

REGULATORY INFORMATION:

N/A

SARA HAZARO CLASSIFICATION:

SARA Title III regulations (40 CFR 370): N/A

SARA SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

DOT PROPER SHIPPING NAME:

SILICONE

--- NUMBER:

N/A

This information is furnished without warranty, representation inducement or licence of any kind, except that is accurate to the best of Polygem, Inc. knowledge, or obtained from sources believed by Polygem, Inc. to be accurate, and Polygem, Inc. does not assure any legal responsibility for use or reliance upon the same. Customers are encouraged to conduct their own tests. Before using any product, read it's label.

01/26/95

HOWARD MATHESON
ASH GROVE CEMENT COMPANY
13939 NORTH RIVERGATE BOULEVARD
PORTLAND, OR 97203

ATTENTION: SAFETY/ENVIRONMENTAL/INDUSTRIAL DEPARTMENT

Attached you will find Material Safety Data Sheets (MSDSs) for products recently shipped or to be shipped to your company. MSDSs are attached for the following products:

433011

HA ANCHORS

Please check to see if these MSDSs are revisions to existing sheets. If so, please note the changes before disgarding the old Material Safety Data Sheets. Keep Material Safety Data Sheets in a safe place in case of accident.

If there are any questions, please feel free to contact me at 412-562-6513 or Steve Thrower at 412-562-6241.

Diane M. Menzies





** MATERIAL SAFETY DATA SHEET **

CHEMTREC 24 Hour Emergency

Assistance Phone No.: 1-800-424-9300

HARBISON-WALKER REFRACTORIES DIVISION OF INDRESCO INC. ONE GATEWAY CENTER PITTSBURGH, PA 15222

Latest Revision Date...08/09/93

Print Date.....01/24/95

Prepared By: S. W. Thrower (412-562-6437)

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT TRADENAME..... HA ANCHORS

TYPE OF REFRACTORY..... High Alumina Brick

H-W BRAND CODE...... 433011

HMIS RATING..... 0 = MinimalHealth: 2

> 0 Flammability: Reactivity: 0

> > 3 = Serious

2 = Moderate

1 = Slight

HA ANCHORS

4 = Severe

HAZARDOUS INGREDIENTS / HAZARD DATA SECTION 2

CHEMICAL NAME (CHEMICAL FORMULA) CAS NUMBER % WEIGHT ACGIH TLV OSHA TWA SEC.313 5-7 Cristobalite (SiO2) 14464-46-1 0.05 mg/cubic meter 0.05 mg/cubic meter No

Alumina (Non-Fibrous) (Al203) 1344-28-1 63-65 10 mg/cubic meter 10 mg/cubic meter

PHYSICAL DATA SECTION 3

Not determined

SPECIFIC GRAVITY OR BULK DENSITY 2.45

SOLUBILITY IN WATER..... Insoluble

APPEARANCE..... Buff color

No odor Brick

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Unless otherwise noted, no fire hazard. Product is a refractory and will not burn.

SECTION 5 EFFECTS OF OVEREXPOSURE * ROUTE OF ENTRY

EFFECTS OF OVEREXPOSURE EYES INHALATION INGREDIENT SKIN Crystalline Silica Delayed lung fibrosis-silicosis No No Yes Crystalline Silica Irritant to skin, eyes, mucous membranes Yes Yes Yes Irritant to skin, eyes, mucous membranes Yes Yes

EMERGENCY AND FIRST AID PROCEDURES SECTION 6

Irritants: Wash from skin or flush from eyes using large amounts of water.

SECTION 7 REACTIVITY DATA

PRODUCT STABILITY..... Stable None CHEMICAL INCOMPATIBILITY.....

HAZARDOUS DECOMPOSITION PRODUCTS N/A

HAZARDOUS POLYMERIZATION..... Will not occur

Page 1

HA ANCHORS

SECTION 7 REACTIVITY DATA CONT'D

MATERIAL TO AVOID..... None

SECTION 8

SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

SECTION 9

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION...... Where air contaminants can exceed

acceptable criteria, use approved respiratory protection equipment

appropriate to form and concentration of

air contaminants.

VENTILATION..... Local exhaust ventilation should be

provided if routine operation generates

dust in excess of allowable limits.

PROTECTIVE GLOVES..... Abrasion resistant

EYE PROTECTION..... Approved safety glasses, goggles, or

faceshields should be used.

FOOT PROTECTION..... Metatarsal safety shoes

OTHER PRECAUTIONS..... None

SECTION 10

SPECIAL PRECAUTIONS

This product contains crystalline silica for which there is limited evidence of a possible association with the incidence of cancer in humans.

SECTION 11

SUPPLIER INFORMATION

This MSDS is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS MSDS. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.



Page 2

*** MATERIAL SAFETY DATA SHEET **

CHEMTREC 24 Hour Emergency

Assistance Phone No.: 1-800-424-9300

HARBISON-WALKER REFRACTORIES DIVISION OF INDRESCO INC. ONE GATEWAY CENTER PITTSBURGH, PA 15222

HA ANCHORS

Latest Revision Date...08/09/93

Print Date.....01/26/95

Prepared By: S. W. Thrower (412-562-6437)

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT TRADENAME..... HA ANCHORS

TYPE OF REFRACTORY..... High Alumina Brick

H-W BRAND CODE..... 433011

HMIS RATING..... Health: 2 0 = Minimal

Flammability: 0
Reactivity: 0

Reactivity: 0 2 = Moderate 3 = Serious

4 = Severe

1 = Slight

SECTION 2 HAZARDOUS INGREDIENTS / HAZARD DATA

CHEMICAL NAME (CHEMICAL FORMULA)

CAS NUMBER

* WEIGHT OSHA TWA ACGIH TLV SEC.313

Cristobalite (8iO2)

14464-46-1

5-7

0.05 mg/cubic meter

No

Alumina (Non-Fibrous) (Al203) 1344-28-1 63-65 10 mg/cubic meter No

SECTION 3 PHYSICAL DATA

pH..... Not determined

SPECIFIC GRAVITY OR BULK DENSITY 2.45

SOLUBILITY IN WATER..... Insoluble
APPEARANCE.... Buff color
ODOR.... No odor

FORM..... Brick

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Unless otherwise noted, no fire hazard. Product is a refractory and will not burn.

SECTION 5 EFFECTS OF OVEREXPOSURE * ROUTE OF ENTRY

INGREDIENT EYES INHALATION EFFECTS OF OVEREXPOSURE SKIN Yes Crystalline Silica Delayed lung fibrosis-silicosis No No Yes Yes Crystalline Silica Irritant to skin, eyes, mucous membranes Yes Irritant to skin, eyes, mucous membranes Yes Yes

SECTION 6 EMERGENCY AND FIRST AID PROCEDURES

Irritants: Wash from skin or flush from eyes using large amounts of water.

SECTION 7 REACTIVITY DATA

PRODUCT STABILITY...... Stable CHEMICAL INCOMPATIBILITY..... None

CHEMICAL INCOMPATIBILITY..... None HAZARDOUS DECOMPOSITION PRODUCTS N/A

HAZARDOUS POLYMERIZATION Will not occur

Page 1

HA ANCHORS

SECTION 7 CONT'D REACTIVITY DATA

MATERIAL TO AVOID...... None

SECTION 8

SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION..... Where air contaminants can exceed acceptable criteria, use approved

respiratory protection equipment

appropriate to form and concentration of

air contaminants.

VENTILATION...... Local exhaust ventilation should be

provided if routine operation generates

dust in excess of allowable limits.

PROTECTIVE GLOVES..... Abrasion resistant

EYE PROTECTION....... Approved safety glasses, goggles, or

faceshields should be used.

FOOT PROTECTION....... Metatarsal safety shoes

OTHER PRECAUTIONS..... None

SECTION 10

SPECIAL PRECAUTIONS

This product contains crystalline silica for which there is limited evidence of a possible association with the incidence of cancer in humans.

SECTION 11

_______ SUPPLIER INFORMATION

This MSDS is based on CSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS MSDS. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.



PRODUCT NAME: LEMONILLA (Aerosol)	Note: Blank spaces are not permitted, if any item is not applicable, or no information is available, the space must be marked to indicate that.
Section I	
Manufactured For:	Emergency Telephone Number
DYNACCO, INC.	CALL CHEM-TEL (800) 255-3924
Address (Number, Street, City, State, and ZIP Code)	. Telephone Number for Information
17461 147TH ST S.E.	(360) 794-8974
	Oate Prepared 8/11/93
MONROE, WA. 98272	772777
· ************************************	****************
SECTION II - HAZA	ARDOUS INGREDIENTS
· ************************************	
*	* OSHA* TLV * TLV * *
	ENT* PEL * PPM * MG/M3* LEL * CAS NUMBE
· ************************************	
* ISOBUTANE (A) * 70	
*AEROSOL - CONTENTS UNDER PRESSURE	30 +/- 5 FSIG +/- 5 FSIG
<pre>*Carcinogenicity: THIS PRODUCT IS NOT CO * BY THE NATIONAL TOXICOLOGY PROGRAM, TH</pre>	
* CANCER, THE OCCUPATIONAL SAFETY AND HE	
* INSTITUTE FOR OCCUPATIONAL SAFETY & HE	
* INSTITUTE FOR OCCOPATIONAL SAFETY & NE.	ACIO.
* SARA: Aerosol products are subject to S	ARA TITLE III Section 312 reporting for
	ization Act of 1986 and CFR 40 part 372.
*	11d 10tt 11c 0 1 1 700 atto 0 1 1 10 pa 10 c 2.
*Pursuant to Proposition 65: CERTAIN RAW	MATERIALS USED IN MAKING THIS
* PRODUCT MAY CONTAIN SMALL AMOUNTS OF M	k
* REGULATED BY PROPOSITION 65. SEE SECT	

· · · · · · · · · · · · · · · · · · ·	- PHYSICAL DATA

Boiling Range: PROPELLANT BELOW 0.0	F Vapor Density: HEAVIER THAN AIR .
FUADBOATION DATE FACTED TUAN ETUCO B	Unicht Dan
EVAPORATION RATE FASTER THAN ETHER Per *PROPELLANTS Bu	Weight: 70 Gallon: NOT APPLICABLE
	Appearance & Odor: DISINFECTANT/DEODORIZE
PH: NOT APPLICABLE V	/apor Pressure: NOT APPLICABLE
Solubility in Water: NOT APPLICABLE M	felting Point: NOT APPLICABLE
**************************************	**************************************
SECTION IV - FIRE AN	ND EXPLOSION HAZARD DATA

DGT Category: CONSUMER COMMODITY Flash ORM-D	Point: PROPELLANT BELOW 20 F LEL: SEE (T.O.C.) SECTION II
Extinguishing Media: CARBON DIOXIDE, DRY	CHEMICAL OR FOAM.
Unusual Fire and	
Explosion Hazards: DO NOT SPRAY NEAR OPE	EN FLAME, KEEP AT ROOM TEMPERATURE AS

EXPOSURE TO DIRECT SUNLIGHT OR OTHER HEAT MAY CAUSE BURSTING.

WATER MAY BE INEFFECTIVE - WATER MAY BE USED TO KEEP FIRE

EXPOSED CONTAINERS COOL.

Special Fire Fighting

Procedures:

SECTION / - HEALTH HAZARD DATA

Threshold Limit Value: (SEE SECTION II HAZARDOUS INGREDIENTS)

Effects of Overexposure: IN A CONFINED AREA VAPORS IN HIGH CONJENTRATION ARE ANESTHETIC. IRRITANT TO SKIN AND UPPER RESPIRATORY SYSTEM. O/ER-EXPOSURE MAY RESULT IN LIGHT-HEADEDNESS, STAGGERING GAIT, GIDDINESS AND POSSIBLE NAUSEA. HARMFUL OR FATAL IF SWALLOWED

Chronic: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE, ALSO KIDNEY AND LIVER DAMAGE.

Medical Conditions Prone to Aggravation by Exposure: NONE ESTABLISHED.

Routes of Entry: Inhalation: YES Skin: YES Ingestion: NO

Emergency and First Aid Procedures:

Breathing: REMOVE PATIENT TO FRESH AIR.

Eyes: FLUSH WITH WATER FOR AT LEAST 15 MINUTES.

Skin: WASH WITH SOAP AND WATER.

Swallowing: CALL PHYSICIAN IMMEDIATELY. DO NOT INDUCE COMITING.

SECTION VI - REACTIVITY DATA

Stability: STABLE Conditions to Avoid: DO NOT STORE ABOVE 120 F

Incompatability ("ONE)

Hazardous Decomposition Products By open flame: CARBON MONO: IDE, CARBON DIOXIDE

Hazardous Polymer:zation: WILL NOT OCCUR

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled: REMOVE ALL SOURCES OF IGNITION, VENTILATE AVOID BREATHING VAPORS (SEE SECTION X) AND REMOVE WITH INERT ABSORBENT

Waste disposal method:

DO NOT INCINERATE - DISPOSE IN ACCORDANCE WITH FEDERAL, STATE AND ' LOCAL REGULATIONS REGARDING POLLUTION.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection: AVOID BREATHING OF VAPOR OR SPRAY MIST (SEE SECTION :

IF PERSONAL EXPOSURE CANNOT BE CONTROLLED BELOW APPLICABLE LIMITS BY VENTILATION, WEAR A PROPERLY FITTED RESPIRATOR APPROVED BY NIOSH/MSHA FOR PROTECTION AGAINST MATERIALS IN SECTION II.

Ventilation: PROVIDE LOCAL EXHAUST VENTILATION IN VOLUME AND

PATTERN TO KEEP TLV OF ALL HAZARDOUS INGREDIENTS IN SECTION II BELOW ACCEPTABLE LIMIT, AND LEL

IN SECTION II BELOW STATED LIMIT.

Protective Gloves: FOR PROLONGED OR REPEATED CONTACT, WEAR GLOVES 👙 WHICH ARE RECOMMENDED BY GLOVE SUPPLIER FOR

FROTECTION AGAINST MATERIALS IN SECTION II.

Eye Protection: FOR PROLONGED USE IN CLOSE QUARTERS RECOMMEND SAFETY

GLASSES WITH UNPERFORATED SIDESHIELDS.

Other Protective Equipment:

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in hardling and storing:

DO NOT STORE ABOVE 120 F. KEEP AT ROOM TEMPERATURE AS EXPOSURE TO DIRECT SUNLIGHT OR HEAT MAY CAUSE BURSTING.

Other Precautions:

KEEP AWAY FROM CHILDREN.

DO NOT PUNCTURE OR INCINERATE.

DO NOT SPRAY NEAR FIRE OR OPEN FLAME.

Pursuant to Proposition 65

PROPOSITION 65 APPLIES TO A LIST OF CHEMICALS NAMED BY THE GOVERNOR OF CALIFORNIA AS CARCINOGENS OR REPFIDUCTIVE TOXINS. WARNING REQUIREMENTS FOR SPECIFIC CHEMICALS TAKE EFFECT ONE YEAR AFTER THEY ARE ADDED TO THE GOVERNOR'S LIST. OTHER CHEMICALS ALREADY ADDED TO THE GOVERNOR'S LIST WILL BE REGULATED LATER UNDER PROPOSITION 65.

SECTION X HAZARDOUS MATERIAL IDENTIFICATION

COMMUNICATION OF PHYSICAL PROPERTY, HEALTH, AND SAFETY INFORMATION IS A KEY FACTOR IN OUR PRODUCT SAFETY PROGRAM. WITH THIS INFORMATION YOU CAN BETTER FULFILL YOUR OBLIGATION TO EDUCATE EXPOSED PERSONNEL IN THE PROPER HANDLING TECHNIQUES REQUIRED TO MAINTAIN SAFETY IN THE WORKPLACE. LISTED IN THIS SECTION IS NECH-HMIS CLASSIFICATION FOR THIS PRODUCT.

> HMIS. CLASSIFICATION CODE

Health:

SLIGHT HAZARD

Flammability:

L SEVERE HAZARD

Reactivity:

C MINIMAL HAZARD

Personal protection: I FACE SHIELD, GLOVES, APRON

THE ABOVE INFORMATION PERTAINS TO THIS PRODUCT AS CURRENTLY FORMULATED. AND IS BASED ON THE INFORMATION AVAILABLE AT THIS TIME. ADDITION OF REDUCERS OR OTHER ADDITIVES TO THIS PRODUCT MAY SUBSTANTIALLY ALTER THE COMPOSITION AND HAZARDS OF THE PREDUCT. SINCE CONDITIONS OF USE ARE OUTSIDE OUR CONTROL. WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND ASSUME NO LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION.

LINCOLN.

Date: 8/25/93 MSDS No.: US-M205

Trade Name: Fleetweld 5P

Sizes: All

MATERIAL SAFETY DATA SHEET

For U.S. Manufactured Welding Consumables and Related Products
Conforms to Hazard Communication Standard 290FR 1910.1200 Rev. October, 1988

Manufacturer/	Product Type:	Covered Flectrode	
然此為西国的自然地而此	Siedister, white arm		
· · · · · · · · · · · · · · · · · · ·			

anutacturer/

Supplier: The Lincoln Electric Company

22801 St. Clair Avenue Cleveland, OH 44117-1199 (216) 481-8100 Classification:

AWS E6010

IMPORTANT!

This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered by Section V; see it for industrial hygiene information.

CAS Number shown is representative for the ingredients listed. All ingredients listed may not be present in all sizes.

(1) The term 'hazardous' in 'Hazardous Materials' should be interpreted as a term required and defined in the Hazards

Compunication Standard and does not necessarily imply the existence of any hazard.

Communication Standard and does not necessarily imply	the existen	ce of ar			
Ingredients:	CAS No.	Wt.X	mg/m	PEL ₃	Supplemental Information:
Cellulose and other carbohydrates	65996-61-4	5	10*	10*	* Not listed. Nuisançe value
Silicates and other binders	1344-09-8	< 5	10*	10*	maximum is 10 mg/m3. PEL value
Iron	7439-89-6	< 5	10*	-10*	for iron exide is 10 mg/m ³ . Thy value for iron exide is 5 mg/m ³
Titanium dioxides (as Ti)***	13463-67-7	< 5	10	10	1
Manganese and/or manganese alloys and compounds (as Mn)***	7439-96-5	1	1.0(c	1.0(c	** As respirable dust.
Magnesi te	1309-48-4	1	10	15	*** Subject to the reporting
Mineral silicates	1332-58-7	1	5**	5**	requirements of Sections 311.
lron oxides (as Fe)	65996-74-9	< 0.5	5	10	312, and 313 of the Emergency
Limestone and/or calcium carbonate	1317-65-3	< 0.5	10	15	Planning and Community
Graphi te	7782-42-5	< 0.5	2,5	2.5	Right-to-Know Act of 1986 and of 40CFR 370 and 372.
]·			·
	•				
					ļ
. ,			<u> </u>		}
			·		
			<u> </u>	<u> </u>	<u>.</u>
					<u>_</u>
					j
			<u> </u>		
Carbon steel core wire	7439-89-6	85	10*	10*	
					-
		<u> </u>	ļ]
			<u> </u>	<u> </u>	(c) Values are for manganese
		ļ <u>.</u>			fume. STEL (Short Term
		<u> </u>		<u> </u>	Exposure Limit) is 3.0
					milligrams per cubic meter.
	HEWELK				

Non Flammable; Welding arc and sparks can ignite combustibles and flammable products. See 249.1 referenced in Section VI.

Supersedes 1/15/90

(CONTINUED ON SIDE TWO)

Product: Fleetweld 5P 8/25/93 Date:

MINISTRISECTION IN THE METH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOC - (Not Otherwise Classified) is 5 mg ACGIH-1987-88 preface states that the TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists. Units are milligrams per cubic meter of air.

Effects of Overexposure: Electric arc welding may create one or more of the following health hazards: Fumes and Gases can be dangerous to your health. Common entry is by inhalation. Other possible routes are skin contact and ingestion. Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nauses,

or dryness or irritation of nose, throat, or eyes.

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. Bronchitis and some lung fibrosis have been reported.

Arc Rays can injure eyes and burn skin.

Electric Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, UC Hanuai (Stick) Welder, or AC Welder, with Reduced Voltage Control.

Emergency and first Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

If BREATHING IS DIFFICULT give oxygen. If NOT BREATHING amploy CPR (Cardiopulmonary Resuscritation) techniques. IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician

Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used.

Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: Coatings on the metal being welded (such as paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume. as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degree activities.)

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Decomposition products of normal operation include those originating from the volatilization. reaction, or exidation of the materials shown in Section II, plus those from the base metal and coating, etc., as noted above.

Reasonably expected fume constituents of this product would include: Primarily iron oxide; secondarily complex oxides of manganese, silicon and sodium.

Haximum fums exposure guideline and PEL for this product is 5.0 milligrams per cubic meter.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the Improve ventilation if exposures are not below limits. walder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1, F1.2, F1.4, and F1.5, available from the American Welding Society, 560 N.W. LeJeune Road, Miami, FL 33126.

Read and understand the manufacturer's instructions and the precautionary label on the product. Request Lincoln Safety Publication 6205. See American National Standard Z49.1, 'Safety In Welding and Cutting' published by the American Welding Society, 550 N.W. LeJoune Road, Miami, Ft., 33125 and OSHA Publication 2208 (29CFR1910), U.S. Government Printing Office, Washington, D.C. 20402 for more details on many of the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathin zone and the general area. Train the welder to keep his head out of the fumes.

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use face shield with filter lens shade number 14 or darker. Shield others by providing

screens and flash goggles. Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sperks and electrical shock. See 249.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to parmit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate from work and ground. Disposal Information: Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally

acceptable manner unless otherwise noted.



Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON DELO 400 SAR 10W

PRODUCT NUMBER(S): CPS235109 CPS238050

COMPANY IDENTIFICATION

EMERGENCY TELEPHONE MUMBERS

Chevron USA Products Company Environmental, Safety, and Health 575 Market St., Room 2900 San Francisco, CA 94105-2856 HEALTH (24 hr): (800)231-0623 or (510)231-0623 (International) TRANSPORTATION (24 hr): CHEMTREC (800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500

Environmental, Safety, & Health Info: (415) 894-1899

Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON DELO 400 SAE 10W

CONTAINING

COMPONENTS AMOUNT LIMIT/QTY AGENCY/TYPE

LUBRICATING BASE OIL SEVERELY REFINED PETROLEUM DISTILLATE

> 80.0%

5 mg/m3 (mist) ACGIH TWA 10 mg/m3 (mist) ACGIH STEL 5 mg/m3 (mist) OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

ADDITIVES INCLUDING THE FOLLOWING < 20.0%

Revision Number: 1 Revision Date: 09/03/93 MSDS Number: 005616 NDA - No Data Available MA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (2400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-DOS061 (06-89)

ZINC ALXYL DITHIOPHOSPHATE

Chemical Name: PHOSPHORODITHIOIC ACID, 0, 0-DI-Cl-14-ALKYL ESTERS, ZINC SALT CAS68649423

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

TLV - Threshold Limit Value

TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPO - Threshold Planning Quantity

RQ - Reportable Quantity PEL - Permissible Exposure Limit

- Ceiling Limit

CAS - Chemical Abstract Service Number

Al-5 - Appendix A Categories

() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

4. FIRST AID MEASURES

EYE:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

If swallowed, give water or milk to drink and telephone for medical

Revision Number: 1

Revision Date: 09/03/93

MSDS Number: 005616

NDA - No Data Available

NA - Not Applicable

advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: (COC) 392F (195C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616 ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force. DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

Revision Number: 1 Revision Date: 09/03/93 MSDS Number: 005616

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

ENGINEERING CONTROLS:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Dark brown liquid.

pH: NDA

VAPOR PRESSURE: NA

VAPOR DENSITY

(AIR=1): NA
BOILING POINT: NA
FREEZING POINT: NDA

MELTING POINT: NA

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.89 @ 15.6/15.6C

DENSITY: NDA EVAPORATION RATE: NA

VISCOSITY: 45 cSt @ 40C

PERCENT VOLATILE

(VOL): NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

Revision Number: 1 Revision Date: 09/03/93 MSDS Number: 005616

11. TOXICOLOGICAL INFORMATION

RYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. BCOLOGICAL INFORMATION

RCOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present any environmental problems other than those associated with oil spills.

Revision Number: 1 Revision Date: 09/03/93 MSDS Number: 005616

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

	SARA 311	CATEGORIES:	1 _	Immediate	(Acute)	Health	Effects:	NO
--	----------	-------------	-----	-----------	---------	--------	----------	----

2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard: NO

4. Sudden Release of Pressure Hazard: NO

5. Reactivity Hazard: No.

REGULATORY LISTS SEARCHED:

01=SARA 313	ll=NJ RTK	21=TSCA Sect 4(e)
02=MASS RTK	12=CERCLA 302.4	22=TSCA Sect 5(a)(e)(f)
D3=NTP Carcinogen	13=MN RTK	23=TSCA Sect 6
04=CA Prop 65-Carcin	14=ACGIH TWA	24=TSCA Sect 12(b)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	25=TSCA Sect 8(a)
06=IARC Group 1	16=ACGIH Calc TLV	26=TSCA Sect 8(d)
07=IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
D8=IARC Group 2B	19-Chevron TWA	29=OSHA CEILING
09=SARA 302/304	20-EPA Carcinogen	30=Chevron STEL
10=PA RTK		

The following components of this material are found on the regulatory lists indicated.

PHOSPHORODITHIOIC ACID, 0, 0-DI-Cl-14-ALKYL ESTERS, ZINC SALTS is found on lists: 01,11,

Revision Number: 1 Revision Date: 09/03/93 MSDS Number: 005616

SEVERELY REFINED PETROLEUM DISTILLATE is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

Revised for indexing purposes only.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 09/03/93 MSDS Number: 005616 MDA - No Data Available NA - Not Applicable) SOLVENT 66/3

UNOCAL

CHEMICALS DISTRIBUTION

PRODUCT DESCRIPTION

Unocal Hydrocarbon Sales 140 Solvent is a medium boiling-range solvent consisting primarily of C10-C12 saturated hydrocarbons. UHS's 140 Solvent is specially treated to remove aromatics and and olefins and meets the definition of non-photochemically reactive as defined by the South Coast Air Quality Management District (SCAQMD) Rule 102 and the Bay Area Air Quality Management District (BAAQMD) Regulation 8 (Previously Rule 56/Regulation 3). Product Code 11106.

140 SOLVENT 66/3

		Specifications	Typical * Properties	ASTM Test
MANUFACTURER PRODUCT NAME		LEMONT REFINERY 140 SOLVENT 66/3		
ADI GRAVITY (60/60 F)		40 MINIMUM	47.0	D-297
CIFIC GRAVITY (60/60 F)			0.7927	D-891
DENSITY @ 60 F (15.6 C)	LB/GAL DEGF		6.60 380	D-850
DISTILLATION, 18P DISTILLATION, 50%	DEGF		386	D-850
DISTIBLATION, DR	DEGF	410 MAXIMUM	400	D-850
EVAPORATION RATE (nBUAC=1)	2-4-2		0.08	4
VAPOR PRESSURE @ 20 C	om Hg		< 1	• 1
VAPOR PRESSURE, REID	PSI		0.15	D-323
VISCOSITY @ 20 C	cst		1.72	D-445
KAURI-BUTANOL VALUE (KB)	% 12 A C	400 111411000	31	D-1133
ANTLINE POINT	DEGF	170 MAXIMUM	159	D-611 b
FLASH POINT (TCC)	DEGF	142 MINIMUM	148 +30	D-156
COLOR, SAYBOLT		+28 MINIMUM	NEGATIVE	+
DOCTOR TEST		1 MAXIMUM	1A	D-130
CORROSION, 3 HRS @ 212 F NONVOLATILE RESIDUE	q/100 ml	0.001 MAXIMUM	< 0.001	41
ACIOITY OF RESIDUE	9/100 mr	U.UUI PAAIMON	NEUTRAL	:
PARAFFINS	VOL%		40.3	
CYCLOPARAFFINS	AOT\$		59.1	\$1
	VOL*	3.0 % MAXIMUM	< 1.0	H
BENZENE CONTENT	PPM	310 5 Km / C 14 1 G/1 .	< 2	D-2600
OLEFINS	VOT &	1.0 % MAXIMUM	0.1	D-1159
SULFUR CONTENT	PPM	50 MAXIMUM	< 5.0	D-2622
MOTDITY (AS ACTITE ACID)	WIS	MUMIXAM 0,000.0	< 0.0010	
PUFRACTIVE INDEX @ 20 C			1.4319	D-1218
UBILITY PARAMETER	(cal/cc)1/2		7.7	1



* American Society for Testing and M

140 SOLVENT 66/3

UNOCAL®

CHEMICALS DISTRIBUTION

PRODUCT DESCRIPTION

Unocal Hydrocarbon Sales 140 Solvent is a medium boiling-range solvent consisting primarily of C10-C12 saturated hydrocarbons. UHS/o 140 Solvent is specially treated to remove aromatics and and olefins and meets the definition of non-photochemically reactive as defined by the South Coast Air Quality Management District (SCAQMD) Rule 102 and the Bay Area Air Quality Management District (BAAQMD) Regulation 8 (Previously Rule 56/Regulation 3). Product Code 11106.

140 SOLVENT 66/3

		Specifications	Typical *. Properties	ASTM Test
MANUFACTURER PRODUCT NAME		LEMONT REFINERY 140 SOLVENT 66/3		N DESCRIPTION OF THE PROPERTY
API GRAVITY (60/60 F)		40 MINIMUM	47.0	D-287
PECIFIC GRAVITY (60/60 F)		40 MINIMENON	0.7927	D-891
LENSITY @ 60 F (15.6 C)	L8/GAL		6.60	
DISTILLATION, TEP	DEGF		380	D-850
DISTILLATION, 50%	DEGF		386	D-850 5
DISTIBLATION, DO	DEGF	410 MAXIMUM	400	D-850
EVAPORATION RATE (nBUAC=1)	DEGL	410 MAXIMON	0.08	
VAPOR PRESSURE @ 20 C	para U.Ar		< 1	4
VAPOR PRESSURE, REID	mm Hg PSI		0.15	D-323
VISCOSITY @ 20 C	cst		1.72	D-445
KAURI-BUTANOL VALUE (KB)	Cat		31	D-1133
ANILINE POINT	DEGF	170 MAXIMUM	159	D-611
FLASH FOINT (TCC)	DEGF	142 MINIMUM	148	D-56
COLOR, SAYBOLT	71361	+28 MINIMUM	+30	D-196
DOCTOR TEST		. DO THETCHINGS	NEGATIVE	36
CORROSION, 3 HRS @ 212 F		1 MAXIMUM	1A	D-130
NONVOLATILE RESIDUE	g/100 ml	0.001 MAXIMUM	< 0.001	
ACIDITY OF RESIDUE	3/100 m1	0.002 (111110)1	NEUTRAL	=
PARAFFINS	AOT &		40.3	<u> </u>
CYCLOPARAFFINS	VOL%		59.l	i i
AROMATIC CONTENT	AOP#	3.0 % MAXIMUM	< 1.0	ij
BENZENE CONTENT	PPM	27 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	< 2	D-2600
OLEFINS	VOL%	1.0 % MAXIMUM	0.1	D-1159
SULFUR CONTENT	PPM	50 MAXIMUM	< 5.0	D-2622
ACIDITY (AS ACETIC ACID)	WIF	NUMIXAM 0.000.0	< 0.0010	
REFRACTIVE INDEX @ 20 C			1,4319	D-1218
LUBILITY PARAMETER	(cal/cc)1/2		7.7	



American Society for Testing and M.

MATERIAL SAFETY DATA SHEET SECTION 1 - PRODUCT/MANUFACTURER'S IDENTITY PRODUCT NAME: QUAT 400 PRODUCT I.D. NUMBER (PIN): N.A. H.M.I.S. WHMIS CLASS: D2B TODUCT NUMBER: N.A. DOT HAZARD CLASS: 2 HEALTH HAZARD RATING DUCT USE: Concentrated quaternary Non-Hazardous disinfectant/cleaner 4 = Extreme 0 FIRE COMPANY: DOT SHIPPING NAME: 3 * High 2 = Moderate DYNACCO 0 REACTIVITY 1 = Stight P.O. BOX 27 0 = Insignificant MONROE WA98272 MAXIMUM PERSONAL В **PROTECTION** EMERGENCY PHONE: 800-255-3924 A = Goggles, B = Goggles & Gloves, C = Goggles, Gloves & Apron. ABBREVIATION KEY: N.A. = Not Applicable, N.E. = Not Established, N.D. = Not Determined SECTION 2 - HAZARDOUS INGREDIENTS INFORMATION HAZARDOUS CHEMICAL IDENTITY CAS NO. <u>%</u> PEL. LD50 TLV LC50 N.E. Water 7732-18-5 50-100 N.E. N.D. N.D. 5197-80-8 Quaternary ammonium chloride 1-5 N.E. N.E. 250mg/kg 86mg/l 1hr Tetrasodium EDTA 64-02-8 1-5 N.E. N.E. 4100mg/kg N.D. Nonionic surfactant 9016-45-9 1-5 N.E. N.E. N.D. N.D. This mixture does not contain components which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR, Part 372. SECTION 3 - PHYSICAL DATA Color and Odor: Pink - Citrus Boiling Point 212°F 100°C Vapor Pressure (mm HG): <30 pH: 11.0 - 11.6 (1% pH 9.0) Physical State: Liquid Freezing Point 32°F 0°C Vapor Density (Air=1): <1 Specific Gravity: 1.03 Odor Threshold: N.A. Water/Oil Distribution: N.A. Evaporation Rate (Water=0.3): <0.4 Solubility in Water: Complete SECTION 4 - FIRE AND EXPLOSION HAZARD DATA Flash Point and Method: N.A. Autoignition Temperature: N.A. Extinguishing Media: Use media proper to the primary cause of fire. Flammable Limits: N.A. LEL: N.A. UEL: N.A. Special Fire Fighting Procedures: None randous Combustion Products: N.A. Unusual Fire and Explosion Hazards: None SECTION 5 - REACTIVITY DATA Chemical Stability: Yes X No Hazardous Decomposition of By-Products: None known Incompatibility (Materials to Avoid): None known Hazardous Polymerization: May Occur Will Not Occur X SECTION 6 - TOXICOLOGICAL PROPERTIES Routes of Entry: Ingestion, Inhalation, Eyes Toxicologically Synergistic Products: None known Medical Conditions Aggravated by Exposure: None known Sensitization: Yes ___ No _X_ Carcinogenicity: None Teratogenicity: None Mutagenicity: None Reproductive Toxicity: None EFFECTS OF OVEREXPOSURE (Acute and/or Chronic): Eyes: May cause severe irritation, redness and possible corneal injury. Skin: May cause irritation, Ingestion: May cause gastrointestinal tract irritation and possible mucosal injury. Inhalation: Prolonged exposure in poorly ventilated area may irritate nasal mucous membranes. SECTION 7 - PREVENTATIVE AND CONTROL MEASURES Respiratory Protection: None normally required with adequate room ventilation. Ventilation: Local Exhaust: N.A. Mechanical: Acceptable Protective Gloves: Rubber to protect sensitive skin. Eye Protection: Safety glasses if splashing is likely. Protective Clothing and Equipment: As needed to prevent wetting of clothing. Work and Hygienic Practices: Wash thoroughly after use. Other Requirements: Keep out of the reach of children. Storage Requirements: Store in cool, dry area. Avoid contamination of food. Follow good housekeeping practices. Steps To Be Taken If Material Is Spilled Or Released: Collect and reuse if possible. Absorb on inert material (sand, clay, etc.) and place into container for proper disposal. Do not allow runoff into public waterways. Waste Disposal: Dispose of as permitted by all federal, provincial, state and local regulatory authorities. Triple rinse container. Do not reuse empty container. SECTION 8 - EMERGENCY FIRST AID PROCEDURES

'ST AID - NOTES TO PHYSICIAN:

Prepared By: Regulatory Affairs Department

Seek medical attention.

Skin: Wash with mild soap and water.

Ingestion: Give gelatin solution, egg whites or 2-3 large glasses of water. Seek medical attention. Inhalation: Remove to fresh air and rest. In all cases if symptoms persist, seek medical attention.

Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

Phone: (360) 794-8974

SECTION 9 - PREPARATION INFORMATION

SECTION 9 - PREFARATION INFORMATION

Date of Preparation: December, 1993

22	oouce M. Bryan Associates, Inc. 221 S. W. Yamhill, Suite 405 rtland OR 97205			THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.					
ār	ol J. Gravatt			COI	MPANIES AFF	ORDING COVERAG	E		
03	-227-7494		COM LETT	PANY A Home	Insurance	Company			
SU	[3]		COM LETT	PANY B Safe	co Insuran	ce Company			
			COM LETT	PANY C					
	Commercial Iron Wor Attn: Margaret Doyl		COM LETT	PANY D		10010000000000000000000000000000000000			
	P. O. Box 61647 Vancouver WA 98666-		COM LETT	PANY E					
1 	ERAGES HIS IS TO CERTIFY THAT THE POLIC NDICATED, NOTWITHSTANDING AN ERTIFICATE MAY BE ISSUED OR M/ XCLUSIONS AND CONDITIONS OF S	Y REQUIREMENT, TERM OR AY PERTAIN, THE INSURANCE	CONDITIO	N OF ANY CONTRA LED BY THE POLICIE	CT OR OTHER DOC S DESCRIBED HERE	UMENT WITH RESPECT TO IN IS SUBJECT TO ALL TH	WHICH THIS		
	TYPE OF INSURANCE	POLICY NUMBER		POLICY EFFECTIVE DATE IMM/DD/YYI	POLICY EXPIRATION DATE (MM/DD/YY)	LIMI	re .		
	COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR. OWNER'S & CONTRACTOR'S PROT. K Ship Repair Legal K \$5,000 ded	MHF922977 Marine Comprehe Liability	nsive	01/07/94	01/07/95	GENERAL AGGREGATE PRODUCTS-COMP/OP AGG. PERSONAL & ADV. INJURY EACH OCCURRENCE FIRE DAMAGE (Any one tire) MED. EXPENSE (Any one person	*1,000,000 *1,000,000 *1,000,000 *1,000,000		
•••	UTOMOBILE HABILITY	BA8535931A	•	03/01/94	03/01/95	COMBINED SINGLE	•1,000,000		
	ALL OWNED AUTOS SCHEDULED AUTOS					BODILY INJURY (Per person)	•		
	HIRED AUTOS NON-OWNED AUTOS					BODILY INJURY (Per accident)	•		
	GARAGE LIABILITY			<u>.</u>		PROPERTY DAMAGE	•		
٤	XCESS LIABILITY					EACH OCCURRENCE	•		
•	OTHER THAN UMBRELLA FORM					AGGREGATE	•		
	WORKER'S COMPENSATION AND			: : : «		STATUTORY LIMITS	•		
	EMPLOYERS' LIABILITY					DISEASE— POLICY LIMIT DISEASE— EACH EMPLOYEE			
	THER		.						
c	aption of operations/ocations/vel All operations of	ICLES/SPECIAL ITEMS		:	<u> </u>	<u> </u>			
•	ALL OPERACIONS OF	cue insuled							
						0.000			
•	TIFICATE HOLDER		SI EX	XPIRATION DATE T	HEREOF, THE ISSUI	D POLICIES BE CANCELLED NG COMPANY WILL ENDEA TO THE CERTIFICATE HOLD	VOR TO		
	Ash Grove Cement Attn: Dick Gable P. O. Box 83007	•	 	EFT, BUT FAILURE 1 ABILITY OF ANY KI	O MAIL SUCH NOT	ICE SHALL IMPOSE NO OB PANY, ITS AGENTS OR RE	LIGATION OR		
	Portland OR 9728	33-000/		Carol J. Gravett Corol & Gravett					
	RD 25-6 (7/90)		Ca	rol J. Grav	att Cook	ana ang Palangan ang ang ang ang ang ang ang ang an	ORPORATION 1:		

Appendix33-001240

PRODUCT HAZARD RATINGS: Health = 2, Fire = 2,

Reactivity = 0, Protective Equipment = *B (HMIG)



SIGHT WINDOW CLEANER	Note: Blank speces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.				
Section I					
Manufactured for :	Emergency Telephone Number				
DYNACCO, INC.	CHEM-TEL (800) 255-3924				
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for Information				
17461 147TH ST S.E.	(360) 794-8974				
MONROE, WA 98272	Date Prepared MAY 11, 1994				

Section II - Hazardous Ingredients/Identity Information

Chemical Names	Exposure Limits (LD50-Oral Rat)	SARA Title III SEC 313	ACGIH TLV/TWA	OSHA PEL	% By Wt.
2 Butoxy Ethanol (CAS# 111-76-2)	1.480g/kg	Yes	25ppm	25ppm (skin)	3.9
Ethyl Alcohol (CAS# 64-17-5)	13.7g/kg	-	1000	1000	10-20
Methyl Alcohol (CAS# 67-56-1)	5.6g/kg	Yes	200	200	0.8
Deionized Water (CAS# 7732-18-5)		-		-	70-75
Liquefied Petroleum Gas (CAS# 6847	6-85-7) NE	-	1000	1000	1-5

Unidentified ingredients are not considered hazardous under the Federal Hazard Communication Standard.

Components Listed As A Suspected Carcinogen: None

Section III - Physical Characteristics

Boiling Point: NA Vapor Pressure (psig): 140 @130F Specific Gravity (H20=1): <1 Solubility/Water. Complete Vapor Density (AIR=1): >1 Evaporation Rate (Ether=1): <1 Appearance and Odor: Wide hollow cone spray; semi-stable foam; solvent/floral odor

Section IV - Fire and Explosion Hazard Data

Aerosol Flammability: This product is considered to be non flammable as described in 16CFR 1500.45. Flammable Limits - % Volume In Air (Propellant): LEL: 1.8 UEL: 9.2 Extinguishing Media: Carbon dioxide, foam and/or dry chemical may be used.

Special Fire Fighting Procedures: Containers should be cooled with water to prevent vapor pressure build up. Use equipment or shielding, as required, to protect personnel from bursting, rupturing or venting containers. Unusual Fire and Explosion Hazards: At elevated temperatures (over 54C-130F) containers exposed to direct flame or heat contact should be cooled with water to prevent weakening of container structure.

Section V - Reactivity Data

Stability: Stable

Hazardous Polymerization: NA
Incompatibility (Materials to Avoid): Strong oxidizing agents, heat and open flame.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide and additional toxic chemicals may be formed in small amounts.

Conditions to Avoid: Do not store above 54C-130F. Keep away from heat, direct sunlight, open flames or spa-ks. Dropping of containers may cause bursting.

Page 2 05/11/94

Section VI - Health Hazard Data

Eyes: X Inhalation: X Skin: X Ingestion: X Route(s) of Entry -Signs and Symptoms of Exposure: Respiratory irritation. High concentrations may produce headache, dizziness, and nausea. Prolonged or repeated skin contact may lead to drying, irritation and dermatitis. Possible skin absorption. Eye contact may cause burning and irritation. This product contains 2-Butoxyethanol, which if ingested in significant quantities may result in red blood cell hemolysis.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin or eye disorders may be aggravated by

this product.

Emergency and First Aid Procedures: Eye Contact: Flush eyes with plenty of water for 15 minutes while holding eyelids open. Get prompt medical attention. Skin Contact. Remove contaminated clothing. Flush skin with water, follow by washing with soap and water. If irritation occurs, get medical attention. Do not reuse clothing until cleaned. Inhalation: Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention. Ingestion: Contact local poison control center or physician IMMEDIATELY.

Section VII - Precautions for Safe Handling and Use

Releases or Spilled: Remove all sources of ignition and ventilate area. Soak up spill with an inert absorbent and place into a designated disposal container. Consult local regulatory agency for proper disposition of material. Waste Disposal Method: Do not puncture or incinerate containers. When contents are depleted continue to depress button until all gas is expelled. Dispose of container in accordance with local, state, and federal regulations.

Handling And Storing: Avoid breathing vapor. Keep away from heat and flame. Use with adequate ventilation. Do not puncture or incinerate containers. Do not expose to direct sunlight or store at temperatures above 130F (54C). Store as Level I Aerosol (NFPA 30B).

Other Precautions: Please read and follow the directions on the product label; they are your best guide to using this product in the most effective way, and give the necessary safety precautions to protect your health.

Section VIII - Employee Protection

Respiratory Protection (Type): None required if good ventilation is maintained. If exposure exceeds occupational exposure limits (Sec. II), use a NIOSH approved respirator to prevent overexposure. Ventilation: Local exhaust is adequate under normal conditions, mechanical ventilation is optional.

Protective Gloves: Chemical resistant gloves*.

Eye Protection: Chemical safety glasses are recommended*.

Other Protective Clothing or Equipment: Wear impervious clothing to prevent skin contact.

Work/Hygienic Practices: Ensure strict sanitary conditions are conformed to when working around chemicals.

Protective clothing and equipment should be in accordance with 29 CFR 1910.132 and CFR 1910.133.

Section IX - Other Regulatory Controls

Governmental Listings: Ingredients of this product are listed on the EPA/TSCA Inventory of Chemical Substances.

Section X - Transportation (D.O.T. Classification)

Shipping Name: Consumer Commodity

Hazard Class: ORM-D

ND-- Not Determ'"ad UN-- Unavailable NE-- Not Established NG-- Negligible NA-- Not Applicable

While the information set forth herein is believed to be accurate as of the date hereof, the Company makes no warranty or guarantee, express or implied, and disclaims all liability arising out of the use of this information.

HMIS RATING: (Based on Aerosol Concentrate): 0-Minimal; 1-Slight; 2-Moderate; 3-Serious; 4-Extreme



IDENTITY GLIDE			Note: 8	Note: Blank speces are not permitted, if any item is not applicable, or n information is available, the space must be marked to indicate the				
Section I								
Manufactured for				Emergency Telephone Number				
DYNACCO, INC.			СНІ	CHEM-TEL (800) 255-3924				
Address (Number, Street, City, State, and ZIP Code)				Telephone Number for Information				
17461 147TH ST S.B. MONROE, WA 98272				(360) 794-8974 Date Prepared JUNE 16, 1994				
		SECTION	II - INGREC	DIENTS				
CHEMICAL NAME	CAS NO.	% WT	313/CHEM	PEL	SKIN	TWA-TLV	CARCINOGEN	
Isopropył Alcohoł Połydimethylsiloxane	67-63-0 63148-62-9	05-10 01-05	NO NO	400 ppm N/E	NO NO	400 ppm N/E	NO NO	
Liquified Petroleum Gas	68476-85-7	01-05	NO	1000 ppm	NO	1000 ppm	NO	
SECTION III - PHYSICAL DATA DATA BELOW BASED ON AEROSOL CONCENTRATE ONLY: P-"ing Point: -212'F			Flash Flamr Exting Speci and p	Flash Point (OF CONCENTRATE ONLY): None to Boiling (212'F) Flammability as per USA Flame Projection Test: Non-Flammable Spray Extinguishing Media: Foam, CO ₂ , Dry Media Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective dothing. Cool fire exposed containers to prevent rupturing. Unusual Fire and Explosion Hazards: Exposure to temperatures above 120°F may cause bursting.				
SECTION V- REACTIVE	TY DATA		SECTI	ON VI - STOP	RAGE ANI	HANDLING	ì	
Stability: Stable Hazardous Polymerization: Will Not Occur Incompatibility: Avoid contact with strong oxidizing agents Hazardous Decomposition Products: Carbon Dioxide, Carbon Monoxide			For in Store Do no	KEEP OUT OF THE REACH OF CHILDREN For industrial & Institutional Use Only. Store in a cool, dry area away from heat or open flame. Do not store at temperatures above 120°F. NFPA Code 30B Rating: Level 1 Aerosol				
	SEC	TION VII -	HEALTH AND	FIRST AID				
PRIMARY ROUTES OF ENTR'	Y & EFFECTS OF OVE	R EXPOSURE	FIRST	AID PROCEDUR	ES			
EVEC-Many serves allebt initiation				. Eluch with losse				

EYES: May cause slight irritation but does not injure eye tissue.

SKIN: None, prolonged contact may cause irritation

INHALATION: Inhalation of mist can cause irritation of nasal and respiratory passages. Abusive or excessive inhalation may cause irritation to the upper respiratory tract, dizziness, nausea and other central nervous system effects.

INGESTION: Can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration of material into the lungs can cause chemical pneumonitis. Minimal toxicity.

EYES: Flush with large amounts of cool running water for at least 15 minutes while holding upper and lower lids open. If initiation persists get medical attention immediately.

SKIN: Wash with soap and water. If irritation persists seek medical attention.

INHALATION: Remove to fresh air. Seek medical attention immediately. If breathing stops give artificial respiration.

INGESTION: Do not induce vomiting. Seek medical attention immediately.

TAYLORMADE PRODUCTS, INC.

P.O. Box 548 Scappoose, Oregon 97056

> **Pallets** Recycled October 31, 1994 (503) 223-7041 Portland (503) 543-7232 Scappoose

Dear Valued Customer:

As you may be aware, the Occupational Safety Hazard Administration (OSHA) requires that employers provide information and legible warnings for hazardous chemicals to which their workers are exposed. Effective August 11, wood dust generated from the sawing, sanding or shaping of non-treated wood or wood products is considered a hazardous chemical and, therefore, the OSHA Hazard Communication Standard applies.

Please take note of the two documents that are enclosed with this letter.

- 1) A Material Safety Data Sheet (MSDS)
- 2) A Wood Dust Warning Label

In order for your company to comply with the DSHA Standard, we recommend that you review and make available to those of your workers who will be exposed to wood dust the information contained within the MSDS. PLEASE NOTE THAT THE INFORMATION WITHIN THE MSDS APPLIES ONLY TO NON-TREATED WOOD PRODUCTS.

Additionally, we recommend that you post copies or facsimiles of the enclosed Warning Label prominently at all work locations where exposure to wood dust will occur. OSHA requires the posting of this information, since solid wood does not come in a container (such as a drum or canister) that can readily be labeled.

Finally, OSHA requires that, should the wood products handled by your company be passed "downstream" to customers whose employees will process the wood in such a way that will generate wood dust, you must also transmit copies of the MSDS and Warning Label to those customers, just as we have sent them to you.

To the best of our knowledge, by following the above procedures, you will be in compliance with the new OSHA rules.

Sincerely,

TAYLORMADE PRODUCTS. INC.

malle R. Bonner

Vice President

For Howard

MATERIAL SAFETY DATA SHEET WOOD DUST

Section 1. Product Identification

Product Name(s): Wood Dust

Synonyms: Finely divided wood particles, powdered wood, sawdust, wood shavings.

Product Description: Mechanical or abrasive activities such as cutting, shaping, drilling, sanding or sawing conducted on untreated wood and untreated wood products can generate wood dust.

Product Use: A byproduct; not generated for

specific use.

Preparation Date: August 10, 1994

Section 2. Hazardous Ingredients

Substance	CAS No.	Percent	Exposure Limits
Wood Dust	None	100	1992 ACGIH TLVs
			TWA: 1 mg/m3*
			TWA: 5 mg/m3+
			STEL: 10mg/m3++
			OSILA PELs*
			8hr.TWA:5mg/m3+
1			STEL; 10 mg/m3+
			8-hr. TWA;2.5
			mg/m3++

- Wood dust (certain hardwoods such as beech and oak.)
- + Wood dust, softwood.
- ++ Wood dust, western red cedar.

Wood dust is primarily composed of cellulose, hemicellulose and lignin. There are also several compounds (mostly organic known as wood extractives.)

** Based on OSHA PELs 1989.

Section 3. Physical Data

Boiling Point:

NAP Variable

Specific Gravity

(Dependent on wood specified and moisture

content.)

Vapour Pressure:

NAP

Vapour Density:

NAP

Melting Point:

NAP

Solubility In H20 (% By Wt.): Variable Evaporation Rate (Butyl Acetate = 1): NAP

% Volatiles by Vol.:

Variable

Appearance and Odour: Light to dark coloured granular solid. Colour and odour are dependent on the wood species and time since dust was generated.

Section 4. Fire & Explosion Data

Flash Point:

NAP

Autoignition Temperature: Variable* (~400-

500°F)

Flammable Limits:

LEL: 40 grams/m3 See Unusual Fire and Explosion Hazards.

UEL: Variable *

*The autoignition temperature and upper explosive limits for wood dust vary with exact composition, particle size, moisture level and rate of heating and dust concentration.

Extinguishing Media: Water, carbon dioxide, sand.

Hazardous Combustion Products: Acrid smoke, carbon monoxide, aldehydes and organic acids.

Unusual Fire & Explosion Hazards: Wood products do not normally constitute an explosion hazard. Mechanical or abrasive activities which produce wood dust as a by-product may present a severe explosion hazard if a dust cloud contacts an ignition source. Hot humid conditions may result in spontaneous combustion of accumulated wood dust.

Partially burned or scorched wood dust can explode if dispersed in air.

An airborne concentration of 40 grams of dust per cubic meter of air is frequently used as the LEL for wood dusts.

Special Fire Fighting Procedures: Use water to wet down wood dust to reduce the likelihood of ignition or dispersion of dust into the air. Remove burned or wet dust to open area after fire is extinguished. Self-contained breathing apparatus (SCBA) is recommended when fighting fire.

Section 5. Reactivity Data

Stability/Polymerization: Product is stable under normal conditions.

Incompatibility: Avoid contact with oxidizing agents and drying oils. Avoid open flame. Product may ignite at temperatures in excess of 400°F.

Hazardous Decomposition Products: Thermal oxidative decomposition can produce irritating and toxic vapours and gases, including carbon monoxide, aldehydes, organic acids and other volatile organic fragments.

Hazardous Polymerization: NAP.

Section 6. Health Hazard Data

Primary Routes of Entry: Inhalation, skin and eye contact.

Signs and symptoms of Exposure: Wood dust can cause skin rashes, allergic reactions, eye and nose inflammation, respiratory irritation, asthma and even certain rare cancers.

Inhalation: Respiratory ailments may occur from dust inhalation and include irritation, sore throat, bronchitis, asthma and reduced pulmonary function. A number of wood dusts including oak, mahogany, redwood and some exotic woods have been reported to cause hypersensitivity reaction leading to asthma.

Skin: Wood dust(s) of certain species can elicit allergic contact dermatitis in sensitized

individuals, as well as mechanical irritation resulting in erythema and hives.

Eye: Direct contact can cause irritation and conjunctivitis.

Ingestion: Not expected under normal use.

Skin Absorption: Not known to occur under normal use.

Chronic Effects: Wood dust, depending on species, may cause allergic contact dermatitis with prolonged, repetitive contact and cause respiratory sensitization after prolonged exposure to elevated dust levels. Inhalation of wood dusts (certain European hardwood: oak and beech), have been implicated in causing cancer of nasal cavity and paranasal sinuses.

Medical Conditions Aggravated by Long-Term Exposures: Skin and respiratory disorders.

Carcinogenicity: Wood dust is not listed as a carcinogen by IARC, NTP, ACGIH or OSHA. However, IARC has concluded that there is sufficient evidence that nasal adenocarcinomas have been caused by exposure in the furniture making industry. The carcinogenic agent(s) in wood dust have not been identified. NIOSH lists wood dusts as Class-X (carcinogen defined without further categorization).

Section 7 Safe Handling Procedures/Control Measures

Engineering Controls: To avoid static sparks, electrically ground and bond all equipment used in and around processes that involve wood dust generation. Enclose processes where possible to prevent dust dispersion in the workplace.

Ventilation: Provide general or local ventilation systems to maintain airborne concentrations of wood dust below applicable provincial or federal standards. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls: consider preplacement and periodic medical exams of exposed workers with emphasis on the eye, skin and respiratory tract.

Housekeeping: Provisions should be made for the cleaning of the worksite at frequent intervals to remove the accumulations of finely divided wood dust that might be dislodged and lead to an explosion.

Respiratory Protection: Wear NIOSH approved breathing apparatus for exposure to wood dust. Air purifying dust/mist respirators are required if airborne concentrations exceed applicable provincial and federal standards.

Protective Clothing / Equipment: Wear protective gloves, boots aprons and gauntlets to prevent prolonged or repeated skin contact. Wear protective eye glasses or chemical safety goggles in dusty environments.

Spill / Leak Procedures: Wood dust should be cleaned up frequently. To avoid dispersing the dusts in air, scoop up into containers or vacuum with appropriate filter. Damp mop any residue. Place recovered wood dust in a container for proper disposal.

Storage Requirements: If wood dust is stored while awaiting disposal, keep in a cool area away from heat, ignition sources and oxidizing materials.

Waste Disposal: If disposed of, in its purchased form, incineration is preferable. Dryland disposal is acceptable in most states. It is however the user's responsibility to determine at the time of disposal whether your product meets RCRA criteria for hazardous waste. Waste material should be packaged, labeled, transported and disposed of or reclaimed in accordance with local, state, provincial and federal regulations.

Section 8. First Aid Measures

Inhalation: Remove exposed person to fresh air. Seek medical attention if persistent irritation, severe coughing or breathing difficulty occurs.

Eyes: flush with water to remove dust particles. If irritation persists, consult a physician.

Skin: Rinse away any loose dust material and wash exposed area with soap and water. Consult a physician if dermatitis or other skin disorders occur.

Section 9. User's Responsibility

The information contained in this material safety data sheet has been compiled from sources believed to be accurate and reliable to be otherwise technically correct. It is the user's responsibility to determine if this information is suitable for their applications and to follow safety precautions as may be necessary in all circumstances. This material safety data sheet does not create a warranty of any kind concerning the accuracy or completeness of the information contained herein and the issuer hereof will not be liable for claims relating to any party's use of reliance on this information however based. The user has the responsibility to make sure that this material safety data sheet is the most up-to-date issued. It is the responsibility of the user to comply with any local, state and federal regulations concerning uses of this product. It is the responsibility of the buyer to research and understand safe methods of storing, handling and disposing of this product.

Section 10. Common Terms

American Conference of Government				
Industrial Hygienists				
Chemicals Abstracts System Number				
International Agency for Research on Cancer				
Not Applicable				
National Institute for Occupational Safety				
and Health				
National Toxicology Program				
Occupational Safety and Health				
Administration				
Permissible Exposure Limit				
Short Term Exposure (8 hours)				

CAUTION!

FOR ALL UNTREATED WOOD & UNTREATED WOOD PRODUCTS

SAWING, SANDING OR MACHINING WOOD PRODUCTS CAN PRODUCE WOOD DUST WHICH CAN CAUSE A FLAMMABLE OR EXPLOSIVE HAZARD.

WOOD DUST MAY CAUSE LUNG, UPPER RESPIRATORY TRACT, EYE AND SKIN IRRITATION. SOME WOOD SPECIES MAY CAUSE DERMATITIS AND / OR RESPIRATORY ALLERGIC EFFECTS.

- Avoid dust contact with ignition source.
- Sweep or vacuum dust for recovery or disposal.
- Avoid prolonged or repeated breathing of wood dust in air.
- Avoid dust contact with eyes and skin.

FIRST AID: If inhaled, remove to fresh air. In case of contact, flush eyes and skin with water. If irritation persists, call a physician.

For additional information, see the MATERIAL SAFETY DATA SHEET.

entrant IIII tottati - ATEC CLANGER 181

Revision Date: 11/01/94

Last Revision Date: 02/21/92

Page 1

MATERIAL SAPETY DATA SHEET

MEDS NO CODE: 0016

DENNISON DIVISION, AVERY-DENNISON INC

1 Clark Mill

Telephone Number: 1-800-252-8379

Framingham, MA 01701

EMERGENCY MEDICAL TELEPHONE NUMBER: 508/879-0511, x4636

SECTION I PRODUCT IDENTIFICATION

Avery-Dennison Identity: MARKS-A-LOT INKS

SECTION II BASARDOUS INGREDIENTS/IDENTITY INFORMATION

Material Name

N-PROPANOL ALCOHOL

CAS /

OSHA.PEL ppa 200

ACOIH TI

71-23-8

ppm 200

All of the chemicals listed above are in compliance with OSHA, CFR, 1910.1200. A finished marker contains a substantially lower percentage by weight of each chemical and has the ink held within an absorbent material so it will be released from the marker only through the writing nib.

SECTION III PHYSICAL DATA

Boiling Point: 208 F

Specific Gravity: .81 @ 20 C

Vapor Pressura (makg): 14

Vapor Density(Air=1): 2.1

Appearance: COLORED LIQUID

Odor: ALCOHOL

Water Solubility: DISPERSABLE

Evaporation Rate (Butyl Acetate=1): 1.10

Malting Point: N/AP

SECTION IV FIRE AND EIPLOSION BAZARD DATA

Plash Point: 74 F Method Used: TCC

Flammable Limits: 2.1-13.5 % Extinguishing Media: WATER, FORM, CARBON DIOXIDE, DRY CEENICAL

Fire Fighting Procedure: SELF CONTAINED BREATHING APPARATUS FOR FIRE FIGHTERS, FLOOD WITH WATER PROM A SAPE DISTANCE

Unusual Basards: FLAMMABLE AND MAY BE IGNITED BY BEAT OR FLAME

SECTION V REACTIVITY DATA

Stability: YES

Conditions to avoid: REAT AND FLAMS

Incompatibility: STRONG ACIDS OR BASES, OXIDIZERS, OR HALOGENS

Estardous Decompostion: CARSON MONOXIDE/OR CARSON DIGITOE

Basardous Polymerisation: WILL NOT OCCUR

SECTION VI HEALTH BASARD DATA

Symptoms of overexposure for each potential route of exposure:

Imbaled: EXCESSIVE CONCENTRATIONS OF VAPORS MAY CAUSE IRRITATION OF NOSE AND TEROAT,

MAY CAUSE DROWSINESS, DITTINESS, AND FATIGUE

Eye Contact: DIRECT CONTACT MAY CAUSE BYS IRRITATION, BURNING, TEARING,

REDNESS AND SWELLING

N/AP - Not Applicable N/E - Not Established

Form MSDE72

p	a	ď	b	2

MATERIAL SAPETY DATA GREET

PRODUCT CODE: 0016 MARKS-A-LOT INKS DENNISON DIVISION, AVERY-DENNISON INC.	Revision Date 11/01/94
SECTION VI REALTH HAZARD DATA Symptoms of overexposure for each potential	
Absorbed thru Skin: DIRECT CONTACT MAY CAUSE MEDNE CRACKING OF THE SKIN Ingestion: N/AP	Se, Burning, Drying, And
Bealth effects or Risks from Nedical Conditions Aggravated by Exposure Chronic: N/AP	Exposure
Carcinogenic: NO This product contains material that are listed on NTP: NO IARC: NO OSEA: NO	the list below:
8.A.R.A INFORMATION: This product is not reportable TOXIC INFORMATION: HOW-TOXIC BY INGESTION PER PR	• under SARA Title III, Section 313 SA, TITLE 16, CRAPTER II
EMERGENCY FIRST AID PR EYE CONTACT: DIRECT CONTACT, FLUSS WITE WATER FOR IRRITATION OR REDNESS DEVELOPS, SEEK SKIN CONTACT: THOROUGHLY WASH WITE SOAP AND WATER	AT LEAST 15 WINUTES. IF MEDICAL ATTENTION
INEALED: REMOVE TO PRESE AIR, IF SYMPTOMS PERSIST ATTENTION INGESTION: N/AP	, SEEK MEDICAL
SECTION VII PRECAUTIONS FOR SAFE EANDLING AND USE	
SPILL OR LEAK Procedures: N/AP	
WASTE DISPOSAL: DISPOSE OF IN ACCORDANCE WITH LOCAL REGULATIONS	L.STATE, FEDERAL
STORAGE: STORE IN A COOL, DRY PLACE AWAY FROM BOU	RCES OF IGHTTION
SECTION VIII CONTROL MEASURES	The state of the s
WORK PRACTICES: OBSERVE ORDINARY MEASURES OF PERSO	STANDE LAND
	and the state of t

To the best of our knowledge this information is accurate; however, we do not, and cannot warrant or guarantee its accuracy and cannot be liable for any damages, consequential or actual which might result from any relience therin. This MEDS was prepared to comply with the OSMA Recard Communication Standard (29 CFR 1910.1200).

sys Contact: MAY CAUSE BYE IMRITATION

N/A - Not Applicable

#/E - Not Established

Page 1 MATERIAL SAPETY DATA SEEET MSDS NO CODE: 0023 Revision Date: 07/30/93 DESIGNATION DIVISION, AVERY-DESCRISON INC. Last Issue Date: 02/21/92 1 Clark Hill Telephone Number: 508/879-0511,1471/ Framingham, MA 01701 EMERGENCY MEDICAL TELEPHONE NUMBER: 508/879-0511,14636 SECTION 1 PRODUCT IDENTIFICATION Avery-Dennison Identity: STAMP PAD INKS SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION OSKA, PEZ. ACGIN. TL Material Mase CAB # D Date PPS RINYLENE GLYCOL 107-21-1 SO PPM SO PPM All of the chamicals listed above are in compliance with OSEA, CFR, 1910.1200. A finished stamp pad constains a substantially lower percentage by weight of each chanical and has the ink held within an absorbent material. SECTION III PHYSICAL DATA Appearance: LIQUID-COLORED Toiling Point: 345 P pacific Gravity: 1.04 0 200 Oder: MilD ODOR Vapor Pressure (Medg): 0.22 4 200 Water Selubility: COMPLETE Yapor Dessity (Air#1): R/AF Evaporation Rate (Rutyl Acetate=1): < 0.01 Welting Point: W/AF FIRE AND EXPLOSION EASARD DATA SECTION IV Plack Point: 225 F Nothed Used: PMCC Flamenble Limits: N/AF Extinguishing Media: FOAM, CARBON DIGITE, DAY CHEMICAL Fire Fighting Procedure: WERE SELF-CONTRIBUTE AREATTING APPARATUS, USE WATER SPEAY TO COOL MEARIN CONTAINME Unusual Easards: NOME SECTION V MEACTIVITY DATA Stability: THE Conditions to avoid: E/AP Incompatibility: STRONG UNIDISING AGENTS Hatardous Decompostion: MAT FORM TOTIC MATERIALS, CARBON DIOSIDS OR CARBON MONOSIDE Rasardous Polymerisation: WILL MOT COCUR EECTION VI REALTH MASARD DATA Symptoms of overexposure for each potential route of exposure:____ Inhaled: NO SYMPTOMS EXPECTED

Porm MaDSal

get: Panascotto TADVESK PAGNE NO. : FROM : Panasomic TADZFAK

ħ	Ŀ	_	_	-
11	а	u		- 4

MATTER AT A MANUAL MANUAL AND ADDRESS.

mage 2		NATERIAL SAFE	TY DATA SHEET
PRODUCT COU DENKISON DI		ENNISON INC	Revision Date: 07/30/93
	HEALTH HAZARD Stome of overexp		ial route of exposure:
Absorbed th	iru skini No EVI	DENCE OF BARNFUL EFFE	CT#
Ingestion		ninal discomport or p Siness,central mervou	
	Real	th effects or Risks f	rom Exposure
Hedical Cos Chronic:	iditions Aggrava	ted by Exposure	
Carcinogeni	ier NO		
		rial that are listed	on the list below:
HTP: NO	IARC: NO	OSEA: NO	
S.A.R.A IND ROTHE DIEGE		product is not report	able under SARA Title III, Section 313
		EMERGENCY FIRST AID	PROCEDURES
	TO PLUSH WITH L	ARGE AMOUNTS OF WATER	, IP EYE IRRITATION
	· ·	MEDICAL ATTENTION	
KIN CONTAC	T: THOROUGHLY	aw dna qaor etih brah	TBA
inraled: F	erent of avonas	AIR, OBTAIN MEDICAL A	TIENTION IF SYMPTOMS PERSIST.
INGESTION	IP CONSCIOUS, ATTENTION WITE		FATER, INDUCE VONITING, AND OBTAIN MEDICAL
SECTION VI	PRECAUTIONS P	OR SAFE BANDLING AND	URE
SPILL OR LE	SAK Procedures:	ABSORB LIQUID ON PAP WITE WATER	ER OR OTHER ASSORBENT MATERIAL, FLUSS
HASTE DISPO	o secquit ilako Regulation	IN ACCORDANCE WITE I	OCAL , STATE, FEDERAL
STORAGE: 1	t/AP		
SECTION VI	XI CONTROL NEA	EURES	
WORK PRACT	ices: observe c	rdinary measures of P	ersonal bygiens

It the best of our knowledge this information is accurate; however, we do not, and cannot cent or guarantee its accuracy and cannot be liable for any damages, consequential . actual which might result from any reliance therin. This MSDN was prepared to comply with the OSEA Hazard Communication Standard (29 CFR 1910.1200).

ALGERT CLECEATOR ATERT TILE FAR ORG

Page 2	MATERIAL SAP	ety data greet
PRODUCT CODE: 0016 DENNISON DIVISION, AVE		Revision Date 11/01/94
SECTION VI MEALTH MAZA	ARD DATA	isl route of exposure:
Absorbed thru Skin: DII CRI Ingestion: N/AP	RECT CONTACT MAY CAUSE RI ACKING OF THE SKIN	DNESS, BURNING, DRYING, AND
Hedical Conditions Aggs Chronic: N/AP	Sealth effects or Risks : ravated by Exposure	rom Exposure
Carcinogenic: No		
This product contains a NTP: NO IARC:	seterial that are listed HO OSEA: NO	on the list below:
S.A.R.A INFORMATION: TO TOXIC INFORMATION: NO	Lis product is not report NH-TOXIC BY INCESTION PER	able under SARA Title III, Section 313 PABA, TITLE 16, CHAPTER II
IRRITATIO	EMERGENCY PIRST AID OMINCI, FLUSE WITH WATER ON OR REDNESS DEVELOPS, S LLY WASH WITH SOAP AND HA	FOR AT LEAST IS MINUTES. IF WERK MEDICAL ATTENTION
INEALED: REMOVE TO FRE	SEE AIR, IF SYMPTOMS PERS	SIST, SEEK MEDICAL -
INGESTION: N/AP		
SECTION VII PRECAUTION	IS FOR SAFE BANDLING AND	U#8
SPILL OR LEAR Procedure	es: N/AP	
WASTE DISPOSAL: DISPOSI	OP IN ACCORDANCE WITH I	OCAL, STATE, FEDERAL
STORAGE: STORE IN A CO	OOL, DRY PLACE AWAY FROM	SOURCES OF IGNITION
SECTION VIII CONTROL	MEASURES	
WORK PRACTICES: OBSERV	/e ordinary mrasures of s	PERSONAL NYOIENE

To the best of our knowledge this information is accurate; however, we do not, and cannot warrant or guarantee its accuracy and cannot be liable for any damages, consequential or actual which might result from any relience therin. This MEDE was prepared to comply with the OSEA Regard Communication Standard (29 CFR 1910.1200).

May be used to compry with OSHA's Hazard Communication Standard, 29 CFR 1910,1200, Standard must be consulted for specific requirements.

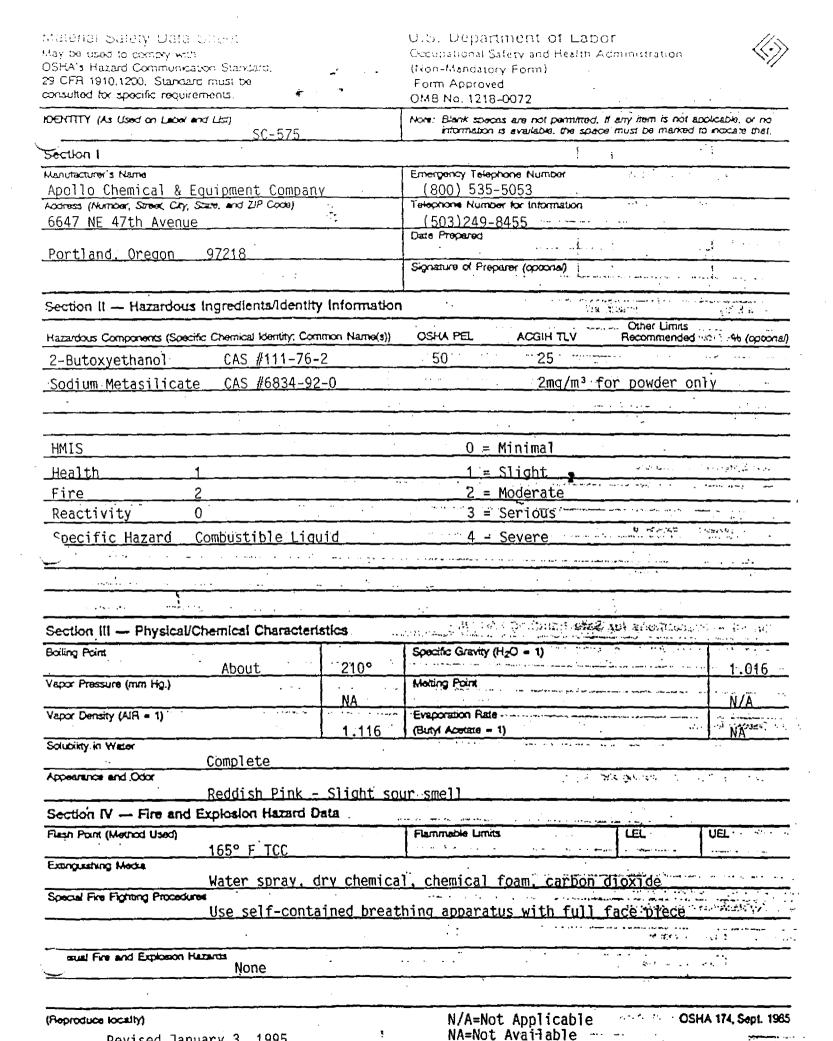
U.D. Department of Labor Cocupational Safety and Health Administration (Non-Mandatory Form) Form Approved OM8 No. 1218-0072



			Note: Black strange	e am not namitta	d If any item is not	apolicable, or no
DENTITY (As Used on Leo	SC-575		a notemotri	avallable, the so	pace must be marke	d to indicate that.
Section I				į	i	
(anutacturer's Name			Emergency Teleph	one Number	#- :	
Apollo Chemical 8	k Equipment Compan	Y	(800) 535-5			
ddress (Mumber, Street, Co	•		Telephone Number		***	
<u> 647 NE 47th Aver</u>	าบe		(503)249-8	<u> 455</u>	,	
loutland: Ouggan	97218		Date Prepared	i	:	1
Portland, Oregon	9/210		Signature of Prepa	rer (opopona/)		
				A. A.	e disk manifesta i di manifest e pri facilità.	
ection II — Hazardo	ous Ingredients/Identity	/ Information	· ·		e e e e e e e e e e e e e e e e e e e	27 A A
lazardous Components (Sc	pecific Chemical Identity; Com	nmon Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommende	d (coppor
2-Butoxyethanol	CAS #111-76-	2	50	- 25	• • • • • • • • • • • • • • • • • • • 	and the second
<u>Sodium Metasilic</u>	ate CAS #6834-92	0		2mq/m³	for powder o	only ·
		<u> </u>		· · · · · · · · · · · · · · · · · · ·		
HMIS	•	· —		lánáma I		
				<u>linimal</u>	e de la companya de l	· some
Health		· · · · · · · · · · · · · · · · · · ·	•	light •	the series was a con-	The same of the same of the same
			<u> </u>	<u>loderate</u>		
	and the second s	•• •				
	0		3 = S	Serious'	Andrew Service of the Control of the	
Fire Reactivity Specific Hazard	O Combustible Liqu	ıid		Serious/	V MARE	Season Se
Reactivity Specific Hazard	Combustible Liqu		4 = \$	Severe		
Reactivity Specific Hazard Section III — Physics	-		4 = \$	Severe	Control admitted	
Reactivity Specific Hazard Section III — Physics	Combustible Liqu	stics	4 = \$	Severe		
Reactivity Specific Hazard Section III — Physics Colling Point	Combustible Liqu	stics	4 = S Specific Gravity (H	Severe		
Reactivity Specific Hazard ection III — Physics onling Point	Combustible Liqu	stics 210°	4 = \$	Severe		1.016
Reactivity Specific Hazard ection III — Physics cling Point apox Pressure (mm Hg.)	Combustible Liqu	stics 210°	Specific Gravity (H Metting Point Evaporation Rate	Severe		1.016 N/A
Reactivity Specific Hazard ection III — Physics orling Point apox Pressure (mm Hg.)	Combustible Liqu	stics 210°	4 = S Specific Gravity (H.	Severe		1.016
Reactivity Specific Hazard ection III — Physics oding Point apox Pressure (mm Hg.) apox Density (AIR = 1)	Combustible Liqu	stics 210°	Specific Gravity (H Metting Point Evaporation Rate	Severe		1.016 N/A
Reactivity Specific Hazard ection III — Physics ciling Point apox Pressure (mm Hg.) apor Density (AIR = 1)	Combustible Liques al/Chemical Characteric About Complete	210° NA 1.116	Specific Gravity (H. Melting Point Evaporation Rate - (Butyl Acetate = 1)	Severe		1.016 N/A
Reactivity Specific Hazard Section III — Physics ciling Point apor Pressure (mm Hg.) apor Density (AIR = 1) otubikty in Water ppearance and Odor	Combustible Liques al/Chemical Characteric About	210° NA 1.116 Slight_sor	Specific Gravity (H. Melting Point Evaporation Rate - (Butyl Acetate = 1)	Severe	SZ ADI ARRETURI	1.016 N/A
Reactivity Specific Hazard Section III — Physics oiling Point apor Pressure (mm Hg.) apor Density (AIR = 1) otubikly in Water posarance and Odor Section IV — Fire ar	Combustible Liques al/Chemical Characteric About Complete Reddish Pink -	210° NA 1.116 Slight_sor	Specific Gravity (H. Melting Point Evaporation Rate - (Butyl Acetate = 1)	Severe	SZ ADI ARRETURI	1.016 N/A
Reactivity Specific Hazard Lection III — Physics citing Point apor Pressure (mm Hg.) apor Density (AIR = 1) citionity in Water posarance and Odor cection IV — Fire ar	Combustible Liques al/Chemical Characteric About Complete Reddish Pink -	210° NA 1.116 Slight_sor	Specific Gravity (H. Metting Point Evaporation Rate - (Butyl Acetate - 1)	Severe	Se gal adjections	1.016 N/A
Reactivity Specific Hazard ection III — Physics oding Point apor Pressure (mm Hg.) apor Density (AIR = 1) odubity in Water poserance and Odor action IV — Fire ar lesh Point (Method Used)	Combustible Liques al/Chemical Characteric About Complete Reddish Pink - Reddish Pink - 165° F TCC	stics 210° NA 1.116 Slight_soreta	Specific Gravity (H Metting Point Eveporation Rate (Butyl Acetate = 1)	Severe	C AUT RECORDED	1.016 N/A
Reactivity Specific Hazard Specific Hazard ection III — Physics citing Point apox Pressure (mm Hg.) apox Density (AIR = 1) olubity in Water posarance and Odor dection IV — Fire ar lash Point (Method Used) xtinguathing Media	Combustible Liques al/Chemical Characteric About Complete Reddish Pink - Reddish Pink - 165° F TCC Water spray, decreses	stics 210° NA 1.116 Slight_someta	Specific Gravity (H Melting Point Evaporation Rate (Butyl Acetate = 1) Flammable Limits 1, chemical f	oam. carbon	LEL TOTOXIDE	1.016 N/A
Reactivity Specific Hazard Specific Hill — Physics Specific Hazard Specifi	Combustible Liques al/Chemical Characteric About Complete Reddish Pink - Reddish Pink - 165° F TCC Water spray, d	stics 210° NA 1.116 Slight_someta	Specific Gravity (H Melting Point Evaporation Rate (Butyl Acetate = 1) Flammable Limits 1, chemical f	oam. carbon	LEL TOTOXIDE	1.016 N/A
Reactivity Specific Hazard Section III — Physics soling Point (apor Pressure (mm Hg.) (apor Density (AIR = 1) solubility in Water Appearance and Odor	Combustible Liques al/Chemical Characteric About Complete Reddish Pink - Reddish Pink - 165° F TCC Water spray, decreses	stics 210° NA 1.116 Slight_someta	Specific Gravity (H Melting Point Evaporation Rate (Butyl Acetate = 1) Flammable Limits 1, chemical f	oam. carbon	LEL TOTOXIDE	1.016 N/A
Reactivity Specific Hazard Section III — Physics oiling Point apor Pressure (mm Hg.) apor Density (AIR = 1) otubikty in Water appearance and Odor Section IV — Fire ar lash Point (Method Used)	Combustible Liques al/Chemical Characteric About Complete Reddish Pink - Reddish Pink - 165° F TCC Water spray, decires Use self-conta	stics 210° NA 1.116 Slight_someta	Specific Gravity (H Melting Point Evaporation Rate (Butyl Acetate = 1) Flammable Limits 1, chemical f	oam. carbon	LEL dioxide	1.016 N/A NAJE

Revised January 3, 1995

N/A=Not Applicable NA=Not Available ---- OSHA 174, Sept. 1985



Revised January 3, 1995

Appendix33-001255

Jan Bertalen vice

Section V —	Reactivity Date						
2:35-2	Unsabie	ŀ	Conditions to Avoid	repeated f	reeze and t	haw cycles	
	المحادة	XX	Avolu	reheared 1	ieers and r	Man Cycles	
Incorpalibility (Malenals 10 Avoid)	'					
hazamous Decor	mpostica or Byprod	ا کت	<u>ids, strong oxidiz</u>				
		:	Carbon monoxide an	id/or carbon	ı dioxide		f
Histaroous Pilymentalion	May Occur	<u> </u>	Conditions to Avolid				
	Will Not Occur	XX					· .
Section VI -	- Health Hazard				 <u> </u>		
Founds) of Entry	: Inh	alation?		Skin?		Ingestion?	· · · · · · · · · · · · · · · · · · ·
Hoskin Hazards ((Laute and Otronic)	X	- Inconting True Acres	A nouses en di	numbon Indoo	A	uso irritation
			n. Ingestion may cause				
_	-		esophagus. Vapors or	absorbtion of	z-Butoxyetnank	ot unrough the sk	in may cause
<u>headache</u> , Carcinoponicity	<u>dizziness, or r</u> אז			WRC Monographs	· · · · · · · · · · · · · · · · · · ·	OSHA Regulated?	
		·	-		<u> </u>	-	
Signs and Symp	Contains one of Exposure	no k	nown or suspected o	carcinogens	· · · · · · · · · · · · · · · · · · ·		
		· 			<u></u>	. · 	<u> </u>
			,				
Hodiczi Cordino Generaly Aggra		Liver	, <u>ƙidney; blood di</u>	sorders may	be aggravat	ed	
					•		
Emorgency and	First Aid Procedure	For c	verexposure to vap	or move to	fresh air.	For contact w	ith skin and
ovec flu	uch withvolo	nty c	f water for 15 min	utas Evas a	at promot modi	cal attention Dr	n not innest
			Handling and Use	uces. Lyes g	ec praipe mean	Car according to	y too trigose.
	in Case Material to						· · · · · · · · · · · · · · · · · · ·
			<u>sonnel, contain sp</u>	<u>ill, ventil</u>	<u>ate area mo</u>	op up and coll	ect liquid .
and pla	<u>ce in a DOT</u>	appro	ved container	· · · · · · · · · · · · · · · · · · ·	•		<u> </u>
							·
eze Disposal Mo	nod Dispose	of it	accordance with a	ill federal,	state, and	i local regula	tion
				· · · · · ·	·	· · · · · · · · · · · · · · · · · · ·	•
perantious to Be	Taken in Handling	und Sto	nng	· · · · · · · · · · · · · · · · · · ·			
	•	v we	ll ventilated place	e. Keep cona	<u>itiner tighi</u>	tly closed	
Keep fr	om freezing		-	. ` ,			
TOTAL TOTAL CONTROL	None norma	illy	required	· · · · · · · · · · · · · · · · · · ·			
ection VIII	Control Meas	ures					•
Spiretory Protect	tion (Specify Type)	annro	ved respirator for	organic va	nors is TIV	is exceeded.	
	oral Exhaust		 	Special			
}- <u>-</u>	UO Mochanical (Genera		xceed TLV Values	Other		 	
		•		Eye Proxection			
iccective Gloves	Rubber G1			EAA LIX.0CDOU	Chemical G	oggles	
ther Proxective C	lothing or Equipme	π	ne normally requir	ed			
onthoras Pra	recommendat		n section VII safe		nd use and	wash skin and	clothing afte
							-, -, -, -, -, -, -, -, -, -, -, -, -, -

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203 503-286-1677 • FAX: 289-2272

VENDOR: 00046900

ATTN ORDER DEPARTMENT

APOLLO CHEMICAL & EQUIPMENT

6647 NE 47TH AVE. PORTLAND OR 97218

PURCHASE ORDER NO.

80510227

INSTRUCTIONS

- Render att invoices in duplicate to plant address.
 Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

Date Issued	7/28/95
Date Required	8/11/95
Terms	NET 30 DAYS
Via	VENDORS TRUCK
Freight Terms	FOB: DESTINATION

This order is a confirmation on not a confirmation

Item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	√ 15		STEAM CLEANER SOAP, APOLLC * M.S.D.S. REQUIRED * Supplier #: SC-575	05-10-900		00-00-0420-0008	97.50
			** ORIGINAL ORDER **				
			(Par P/st 411675 8/14/95)				
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
	`.					·	
ļ							ĸ
				APPROVAL	000000	RE SIGNED TÓ RE VALID	

APPROVAL

ORDER MUST BE SIGNED TO BE VALID

Jan. 24. 1995 11:14AM COE 15 EAST
** MATERIAL SAFETY DATA SHEET **

CHEMTREC 24 Hour Emergency
Assistance Phone No.: 1-800-424-9300

No. 3441 F. 3/4
HARBISON-WALFrom: MENZIES: TORIES
DIVISION OF TRANSPORTER
ONE GATEWAY CENTER
PITTSBURGH, PA 15222

Latest Revision Date...08/09/93

Print Date.....01/24/95

Prepared By: 8. W. Thrower (412-562-6437)

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT TRADENAME..... HA ANCHORS

TYPE OF REFRACTORY..... High Alumina Brick

H-W BRAND CODE...... 433011

HMIS RATING..... Health: 2 0 = Minimal

Flammability: 0 1 = Slight

Reactivity: 0 2 = Moderate

3 = Serious

HA ANCHORS

4 = Severe

SECTION 2 HAZARDOUS INGREDIENTS / HAZARD DATA

CHEMICAL NAME (CHEMICAL FORMULA) CAS MUMBER & WEIGHT CORRA TWA ACGIS TLY GEC.313

Cristobalite (SiO2) 14464-46-1 5-7 0.05 mg/cubic meter No

Alumina (Mon-Fibrope) (Al203) 1344-26-1 65-65 10 mg/orbic meter 10 mg/orbic meter No

SECTION 3 PHYSICAL DATA

pH..... Not determined

SPECIFIC GRAVITY OR BULK DENSITY 2.45

SOLUBILITY IN WATER..... Insoluble APPEARANCE..... Buff color ODOR..... No odor

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Unless otherwise noted, no fire hazard. Product is a refractory and will not burn.

本本本本的 1995年 1996年 19

SECTION 5 EFFECTS OF OVEREXPOSURE * ROUTE OF ENTRY

EPPECTS OF OVEREXPOSURE IVE: THEALATION INCREDIENT 5XII Crystalline Silica Delayed lung fibrosis-eilicosis No. No Yes Crystalline Silics Yes Irritant to skip, eyes, mucous membranes Yes **Tos** Intitant to skin, area, magus membranda Yee Yes Yes

SECTION 6 EMERGENCY AND FIRST AID PROCEDURES

Irritants: Wash from skin or flush from eyes using large amounts of water.

SECTION 7 REACTIVITY DATA

泰士学学学生工工工工工学学学生美国学生工工工工工工工学等等的成果工工**工工工工工工工工工**

PRODUCT STABILITY..... Stable CHEMICAL INCOMPATIBILITY..... None HAZARDOUS DECOMPOSITION PRODUCTS N/A

HAZARDOUS POLYMERIZATION Will not occur

Page 1

No. 3441 P. 4/4

From: MENZIES

SECTION 7

REACTIVITY DATA

HA ANCHORS

CONT'D

MATERIAL TO AVOID...... None

SECTION 8

SPILL AND LEAK PROCEDURES

Most refractory products may be landfilled. However, eighe your application of this product may change its chamical characteristics, and wines disposal procedures may vary with locals and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.

SECTION 9

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION.....

Where air contaminants can exceed acceptable criteria, use approved respiratory protection equipment appropriate to form and concentration of air contaminants.

VENTILATION.....

Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits.

PROTECTIVE GLOVES.....

Abrasion resistant

EYE PROTECTION....

Approved safety glasses, goggles, or

faceshields should be used. Metatarsal safety shoes

FOOT PROTECTION..... OTHER PRECAUTIONS..... None

SECTION 10

SPECIAL PRECAUTIONS

This product contains orgatalline cilics for which there is limited evidence of a possible association with the incidence of and supplies the supplies of the supplies of

SECTION 11

SUPPLIER INFORMATION

This mans is based on COMA FORM 174 but modified to more adequately smit refractory products. -111 data-tra-subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Tour application of the product may change its characteristics. THE DATA PROVIDED HEREIS ARE MELIEVED CONNECT OR ARE OBTAINED FROM SOURCES RELIEVED TO BE GENERALLY RELIABLE. SARBISON-MALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS FRODUCT, AND HARRISON-WALKER ASSUMES NO CHICARTON OR LIBELLEY FOR RELIANCE OF THE IMPORNATION CONTAINED IN THIS MESSA. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.



HARBISON-WALKER REFRACTFrom: MENZIES Division of INDRESCO Inc.

One Gateway Center, Pittsburgh, PA 15222

DATE: 1-24-95

PHONE: 412-562-6513 FAX: 412-562-6489

FROM: Diane M. Menzies Central Order Entry

TO: Ash Shove Cenent Co.

4 TOTAL PAGES INCLUDING COVER SHEET

If you do not receive all pages, please call me at the above number.

-- HAVE A NICE DAY --





5441 r. 2/4 From:MEN2IES



HARBISON-WALKER REERACTURIES Division of INDRESCO Inc. One Gateway Center, Pittsburgh, PA 15222

January 24,	1995	١
-------------	------	---

Portla	nd, OR 9	7203
	N. Riverg	· · · · · · · · · · · · · · · · · · ·

In response to your request, enclosed please find the Material Safety Data Sheet(s) that you requested.

If you have any problems or questions, please feel free to contact me at (412) 562-6513 or Stephen Thrower at (412) 562-6437.

Sincerely,

HARBISON-WALKER REFRACTORIES

Diane M. Menzies

/dmm

Enclosure(5)







March 17, 1995

ASHGROVE CEMENT CO 13939 N RIVERGATE PORTLAND, OR 972036608

IN ACCORDANCE WITH THE HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FROM THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), WE ARE ENCLOSING A SAFETY DATA SHEET (MSDS) ON THE FOLLOWING:

PRODUCT CODE

PRODUCT DESCRIPTION

HO46 DLG2 CHEVRON HYDRAULIC OIL AW 46 CHEVRON DURALITH GR EP 2

ATFTF

CHEVRON ATF TYPE F

THE MSDS'S SHOULD BE UTILIZED FOR THE EDUCATION AND TRAINING OF YOUR EMPLOYEES AS TO THE PROPERTIES, HAZARDS, AND PROTECTION REQUIREMENTS RELATED TO THE PRODUCTS WHICH YOU PURCHASE FROM PRIESTLEY OIL AND CHEMICAL

SINCERELY YOURS,

Vincent J. McClain

ENVIRONMENTAL AND SAFETY COORDINATOR

PORTLAND

2429 North Borthwick Avenue, Portland, OR 97227-1776 P.O. Box 12570, Portland, OR 97212-0570

Telephone: (503) 288-5294

WATS: 1-800-422-5069 • FAX: (503) 288-0421

SEATTLE

(206) 223-1356

VANCOUVER

7208 N.E. St. Johns Road, Vancouver, WA P.O. Box 530 Vancouver, WA 98666-0530 Telephone: (206) 694-2521 • (503) 239-1566





Material Safety Data Sheet

CHBVRON Hydraulic Oil AW 150 46

CPS255674

Page 1 of 7

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergeacy response reporting restricts of a community of the co

P O SOX 12570 PORTIND, OR 97212 BULE LUBS OIL PICK-UP WE FOR WILLERIDGE PORTLAND, OR 97210

Print Date: October 08, 1992

1, PRODUCT IDENTIFICATION

CHEVRON Hydraulic Oil AW ISO 46

PRODUCT NUMBER(S): CPS255674
PRODUCT INFORMATION: (8GG)582-3835

Revision Number: L Revision Date: 06/04/92 MSDS Number: 004614

NDA - No Data Available NA - Not Applicable

Prepared According to the CHMA Massid Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Mealth Center, Inc., P.O. Box 4854, Richmond, CA 94804.

X-005051 (06-89)

ميد .

2. FIRST AID MEASURES

EMERGENCY NUMBER (24 hr): (800)457-2022 or (510)233-3737 (International)
EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn. SEIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Note to Physician: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.
INHIALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

ETE CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials. RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This substance may be irritating if inhaled. Signs and symptoms of respiratory tract irritation may include, but may not be limited to, one or more of the following: masal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing. This hazard evaluation is based on data from similar materials.

INGESTION:

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614 MDA - No Data Available NA - Not Applicable

X-065021 (01-89)

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

Ho special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. PIRE FIGHTING MEASURES

SPECIAL NOTES: Leaks/ruptures in high pressure systems using materials of this type can create a fire hazard when in the vicinity of Ignition sources (eg. open flame, pilot lights, sparks, or electric arcs). FLASE POINT: (COC) >392F (200C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (& by volume in air): Lower: NA Upper: NA EXTINGUISHING MEDIA:

CD2, Dry Chemical, Foam, Water Fog

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur and phosphorus. Incomplete combustion can produce carbon

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; (Least-O, Slight-I, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

MSDS Number: 004614 Ravision Date: 06/04/92 Revision Number: 1

MDA - No Data Available NA - Not Applicable

X-D0S021 (01-89)

XDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous material which may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

7. PHYSICAL AND CHEMICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Pale yellow liquid.

SCILING POINT: NA MEUTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.88 @ 15.6/15.60

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR-1): NA

VISCOSITY: 41.4 cSt @ 40C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHENTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616 SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614

NDA - No Data Available MA - Not Applicable

X-00\$021 (01-89)

1

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PBL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CASE COMPONENT/REGULATORY LIMITS

100.0 % CHEVRON Hydraulic Oll AW ISO 46

CONTAINING

> 99.0 % LUBRICATING BASE OIL 5 mg/m3 mist ACGIH TWA 10 mg/m3 mist ACGIH STEL 5 mg/m3 mist OSHA TWA

The BASE OIL may be a mixture of any of the following: CAS 64741864, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

< 1.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STSL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INFORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects: NO

2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard: NO

4. Sudden Release of Pressure Bazard: NO

5. Reactivity Hazard:

NO

REGULATORY LISTS SEARCHED:

Revision Number: 1 Revision Date: 06/08/92 MSDS Number: 004614

NDA - No Data Available NA - Not Applicable

X-005027 (01-89)

CHEVRON Hydraulic Oil AN 180 66

02-HASS RTK 03-NTP Carcinogen 01-SARA 313 D4=CA Prop. 65 05-MI 406 06-IARC Group 1 09-5ARA 302/304 07=[ARC Group 2A 08-INRC Group 28 10=PA RTK 11=NJ RTK 12-CERCLA 302.4 13-MN RTK 14=ACGIH TWA 15-ACGIH STEL 16-ACGIH Calculated TLV 17-OSHA TWA 18-OSHA STEL 19=Chevron TWA 20-EPA Carcinogen 21=TSCA Sect 4(e) 22=TSCA Sect 5(a)(e)(f) 23=TSCA Sect 6 24-TSCA Sect 12(b) 28=Canadian WHM15 Z5=TSCA Sect 8(a) 26-TSCA Sect 8(d) 29-OSHA CEILING 30 = Chevron STEL

The following components of this material are found on the regulatory lists indicated.

LUBRICATING BASE OIL

is found on lists: 14,15,17,

11. TOXICOLOGICAL INFORMATION

EYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TORICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrocracking. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614 NDA - No Data Available NA - Not Applicable

The above information is based on the data of which we are sware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 1 Revision Date: 06/04/92 MSDS Number: 004614
MDA - No Data Available NA - Not Applicable

X-00\$021 001-89



Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON Dura-Lith Grease EP NLGI 2

PRODUCT NUMBER(S): CPS254595

COMPANY IDENTIFICATION

EMERGENCY TELEPHONE NUMBERS

Chevron USA Products Company Environmental, Safety, and Health 575 Market St., Room 2900 San Francisco, CA 94105-2856 HEALTH (24 hr): (800)231-0623 or (510)231-0623 (International) TRANSPORTATION (24 hr): CHEMTREC (800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500

Environmental, Safety, & Health Info: (415) 894-1899

Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON Dura-Lith Grease EP NLGI 2

CONTAINING

COMPONENTS		AMOUNT	LIMIT/QTY	AGENCY/TYPE	
	LUBRICATING BASE OIL SEVERELY REFINED PET		5 mg/m3 (mist) 10 mg/m3 (mist) 5 mg/m3 (mist)	ACGIH TWA ACGIH STEL OSHA PEL	

The BASE OIL may be a mixture of any of the following: CAS 64741864, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

THICKENER FOR GREASES

> 9.0%

Revision Number: 3 Revision Date: 10/21/93 MSDS Number: 004698
NDA - No Data Available NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (2400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-DOS051 (06-69)

ADDITIVES

< 4.0%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

TLV - Threshold Limit Value

Reportable Quantity

- Ceiling Limit

Al-5 - Appendix A Categories

TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

PEL - Permissible Exposure Limit

CAS - Chemical Abstract Service Number

() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

RYE:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

4. PIRST AID MEASURES

EYE:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

Revision Number: 3

Revision Date: 10/21/93

MSDS Number: 004698

NDA - No Data Available

NA - Not Applicable

X-DOS021 (01-89)

Ċ

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

NOTE TO PHYSICIANS:

In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: 480F (249C)

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and zinc. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616 ACCIDENTAL RELEASE MEASURES:

Clean up spills immediately.

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

Revision Number: 3 Revision Date: 10/21/93 MSDS Number: 004698

NDA - No Data Available NA - Not Applicable

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required.

ENGINEERING CONTROLS:

No special ventilation is necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Smooth amber grease.

NDA pH:

VAPOR PRESSURE: NA

VAPOR DENSITY

(AIR=1): Nλ

BOILING POINT: NA FREEZING POINT: NDA

NA

MELTING POINT:

SOLUBILITY:

Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.900 15.6/15.6C

DENSITY: NDA

EVAPORATION RATE: NA

VISCOSITY:

12 cSt @ 100C (Min.)

PERCENT VOLATILE

(VOL):

NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates,

peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

MSD5 Number: 004698 Revision Number: 3 Revision Date: 10/21/93

NA - Not Applicable NDA - No Data Available

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrocracking. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

12. BCOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present an environmental problem.

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for

Revision Number: 3 Revision Date: 10/21/93 MSDS Number: 004698

NDA - No Data Available NA - Not Applicable

additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

1. Immediate (Acute) Health Effects: NO

2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard: NO

4. Sudden Release of Pressure Hazard: NO

5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	21=TSCA Sect 4(e)
02≈MASS RTK	12=CERCLA 302.4	22=TSCA Sect 5(a)(2)
03=NTP Carcinogen	13=MN RTK	23=TSCA Sect 6
04=CA Prop 65-Carcin	14=ACGIH TWA	24=TSCA Sect 12(b)
05=CA Prop 65-Repro Tox	15-ACGIH STEL	25=TSCA Sect 8(a)
06=IARC Group 1	16=ACGIH Calc TLV	26-TSCA Sect 8(d)
07=IARC Group 2A	17=OSHA PEL	27=TSCA Sect 4(a)
08=IARC Group 28	18=DOT Marine Pollutant	28=Canadian WHMIS
09=SARA 302/304	19=Chevron TWA	29=OSHA CEILING
10=PA RTK	20=EPA Carcinogen	30=Chevron STEL

The following components of this material are found on the regulatory lists indicated.

SEVERELY REFINED PETROLEUM DISTILLATE is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

This Material Safety Data Sheet has been revised to comply with the ANSI 2400.1 Standard. Changes have also been made throughout this MSDS. Please read the entire document.

Revision Number: 3 Revision Date: 10/21/93 MSDS Number: 004698

NDA - No Data Available NA - Not Applicable

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 3 Revision Date: 10/21/93 MSDS Number: 004698

 Emergency Number (800)457-2022 or (510)233-3737



Material Safety Data Sheet

CHEVRON ATF Type F

CPS226588

1 of 7 Page

This Material Safety Data Sheet contains environmental, health and toxicology information for your employees. Please make sure this information is given to them. It also contains information to help you meet community right-to-know/emergency response reporting PRIESTLEY OIL & CHEMICAL 3907475 MATERIAL ORDERED FOR: CO., INC. PACKAGE PICK-UP W.B.

P O BOX 12570 PORTLAND, OR 97212 FOR WILLERIDGE PORTLAND, OR 97210

Princ Date: August 05, 1992

1. PRODUCT IDENTIFICATION

CHEVRON ATF Type F

- A HAZARD WARNING IS NOT REQUIRED FOR THIS PRODUCT UNDER OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

PRODUCT NUMBER(S): CPS226588

PRODUCT INFORMATION: (800)582-3835

MSDS Number: 004567 Revision Date: 10/15/91 Revision Number: 1 NDA - No Data Available NA - Not Applicable

Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200) by the Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA 94804.

X-00\$051 (06-89)

2. FIRST AID - EMERGENCY NUMBER (800)457-2022 OR (510)233-3737

EYE CONTACT:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN CONTACT:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

3. IMMEDIATE HEALTH EFFECTS - (ALSO SEE SECTIONS 11 & 12)

EYR CONTACT:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN IRRITATION:

This substance is not expected to cause prolonged or significant skin irritation. This hazard evaluation is based on data from similar materials.

DERMAL TOXICITY:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

RESPIRATORY/INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

4. PROTECTIVE EQUIPMENT

EYE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be

Revision Number: 1 Revision Date: 10/15/91 MSDS Number: 004567

NDA - No Data Available NA - Not Applicable

minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended.

VENTILATION:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

5. FIRE PROTECTION

FLASH POINT: (COC) 175C (347F) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam, Water Fog

NFPA RATINGS: Health 0; Flammability 1; Reactivity 0; Special NDA; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association or, if applicable, the National Paint and Coating Association, and do not necessarily reflect the hazard evaluation of the Chevron Environmental Health Center. Read the entire document and label before using this product.

FIRE FIGHTING PROCEDURES:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. STORAGE, HANDLING, AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

STABILITY:

Stable.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

INCOMPATIBILITY:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

SPECIAL PRECAUTIONS:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION: Do not use pressure to empty drum or explosion may result.

Revision Number: 1 Revision Date: 10/15/91 MSDS Number: 004567

NDA - No Data Available NA - Not Applicable

X-00S021 (01-89)

7. PHYSICAL PROPERTIES

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

APPEARANCE: Red liquid.

BOILING POINT: NDA MELTING POINT: NA EVAPORATION: NA

SPECIFIC GRAVITY: 0.87 @ 15.6/15.60

VAPOR PRESSURE: NA

PERCENT VOLATILE (VOLUME %): NA

VAPOR DENSITY (AIR=1): NA

VISCOSITY: 7.0 cSt @ 100C (Min.)

8. ENVIRONMENTAL CONCERNS, SPILL RESPONSE AND DISPOSAL

CHEMTREC EMERGENCY PHONE HUNBER: (800) 424-9300 (24 hour). SPILL/LEAK PRECAUTIONS:

This material is not expected to present any environmental problems other than those associated with oil spills.

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

DISPOSAL METHODS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

9. EXPOSURE STANDARDS, REGULATORY LIMITS AND COMPOSITION

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The percent compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

PERCENT/CAS# COMPONENT/REGULATORY LIMITS

Revision Number: 1 Revision Date: 10/15/91 MSDS Number: 004567

MDA - No Data Available NA - Not Applicable

X-00S021 (01-89)

100.0 ₹ CHEVRON ATF Type F

CONTAINING

> 90.0 % DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC

CAS64742525 5 mg/m3 mist ACGIH TLV

10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

DISTILLATES, HYDROTREATED LIGHT NAPHTHENIC

CAS64742536 Smg/m3 mist ACGIH TLV

10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547 5mg/3 mist ACG!H TLV

10mg/m3 mist ACGIH STEL 5mg/m3 mist OSHA TWA

DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

CAS64742650

< 10.0 % ADDITIVES

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity CPS - CUSA Product Code

CC - Chevron Chemical Company CAS - Chemical Abstract Service Number

10. REGULATORY INPORMATION

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

SARA 311 CATEGORIES: 1. Imm

1. Immediate (Acute) Health Effects; NO

2. Delayed (Chronic) Health Effects; NO

3. Fire Hazard; NO

4. Sudden Release of Pressure Hazard; NO

Reactivity Hazard; NO

The following components of this material are found on the regulatory lists indicated by the number below the component name:

DISTILLATES, HYDROTREATED HEAVY NAPHTHENIC

is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED LIGHT NAPHTHENIC

is found on lists: 14,15,17,

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

Revision Number: 1 Revision Date: 10/15/91 MSDS Number: 004567

NDA - No Data Available NA - Not Applicable

REGULATORY LISTS SEARCHED:

01=SARA 313 02=MASS RTK 03-NTP Carcinogen 04=CA Prop. 65 05=MI 406 06-IARC Group 1 07=IARC Group 2A 08=IARC Group 2B 09=SARA 302/304 10=PA RTK 11=NJ RTK 12=CERCLA 302.4 13=MN RTK 15=ACGIH STEL 14=ACGIH TLV 16=ACGIH Calculated TLV 17=OSHA TWA 18-OSHA STEL 19=Chevron TLV 20-EPA Carcinogen 21=TSCA Sect 4(e) 22=TSCA Sect 5(a)(e)(f) 23=TSCA Sect 6 24=TSCA Sect 12(b) 25=TSCA Sect 8(a) 26=TSCA Sect B(d) 28=Canadian WHMIS

29=OSHA CEILING

11. PRODUCT TOXICOLOGY DATA

BYE IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN IRRITATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

DERMAL TOXICITY:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

RESPIRATORY/INHALATION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

INGESTION:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

12. ADDITIONAL HEALTH DATA

ADDITIONAL HEALTH DATA COMMENT:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrocracking. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

Revision Number: 1 Revision Date: 10/15/91 MSD\$ Number: 004567

NDA - No Data Available NA - Not Applicable

X-00S021 (01-89)



IMPORTANT - CONTAINS MATERIAL SAFETY DATA SHEETS (MSDS). PLEASE ROUTE TO PROPER PERSON OR DEPARTMENT.

We have enclosed Material Safety Data Sheets for products your company purchased from Kar Products. Our order number, invoice number and your purchase order number are shown below.

We are committed to helping you comply with the OSHA Hazard Communications Standard which requires that all personnel who may be exposed to hazardous materials must be provided by their employer with accurate information regarding the potential hazards of the materials they are using and trained in proper work practices to minimize any risk to your employees.

It is of critical importance that these MSDS sheets are forwarded to the person in your company responsible for implementing these regulations.

This packet was prepared by a computerized system which automatically prints and mails an MSDS when a product is first ordered by a customer or when there has been a change to the MSDS. Kar Products is committed to providing the service you need, and we ask that you contact your sales representative if you have questions or problems in this regard. If this is not convenient, please call Bobbie Cunnally at 1-708-296-6111 extension 6079.

ASH GROVE CEMENT WEST 13939 N RIVERGATE BLVD

PORTLAND, OR 97203

ORDER: 319784	INVOICE: 939051	CUST NO: 30255000
PROD. CODE	KAR PART #	DESCRIPTION:
79970 79970 79970	83488-00 83489-00 83490-00	ROLOC SURF.COND.DISC ROLOC SURF.COND.DISC ROLOC DISC PAD HLDR

PRODUCT CODE: 79970 - 79972 PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)
This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): SURFACE CONDITIONING DISCS (77960-77962) (83488-83493

SECTION I - PRODUCT ID	ENTIFICATIO	N	<u> </u>			
MANUFACTURERS NAME AND ADDRESS: KAR PRODUCTS 461 N. Third Avenue Des Plaines, IL. 60016	TELEPHONE NUM Rush Poison Co Emergency: Information:	ontrol (800) ()	752-7869 - 296-6111		Date Entered Last Revision	n: 03/24/94
SYNONYMS: CHEMICAL FAMILY: HAZARD LABEL: MOLECULAR FORMULA: MOLECULAR WEIGHT: NE OF NA		**************************************				
SECTION II - HAZARDOUS	INGREDIENTS	/IDENTI	TY INFORM	ATION		
HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL ID Nylon Fibers PHENOL-FORMALDEHYDE POLY (METHYL METHACRYLATE) Epoxy Resin Abrasive particles SECTION III — PHYSICAL/O		CAS # NA 9003-35-4 9011-14-7 NA NA RACTERI	NA NA NA NA 10mg/m3(TWA)	CGIH TLV	OTHER LIMITS	PERCENTAGE 5.0 - 35.0 0.0 - 33.0 0.0 - 33.0 0.0 - 65.0
	FIC GRAVITY (WATER =					· · · · · · · · · · · · · · · · · · ·
MELTING POINT: VAPOR VAPOR PHYSICAL STATES: [] Gas EVAPO [] Liquid (Buty	PRESSURE (MM HG): . DENSITY (AIR=1): RATION RATE: L Acetate=1) ILITY IN WATER:	NA NA NA	ble			
Non-woven fibrous articles impregnated wit Viscosity: NA SECTION IV - FIRE AND E	·			ith cured r	esincus binder	·s.
FLASH PT: NE or NA METHOD USED: NA EXTINGUISHING MEDIA: Water, carbon dioxide, foam, dry chemical. SPECIAL FIRE FIGHTING PROCEDURES: NA UNUSUAL FIRE AND EXPLOSION HAZARDS: NA			EXPLOSIVE LIMITS	: LEL:	NA UE	EL: NA
SECTION V - REACTIVITY	DATA					
CONDITIONS TO AVOID - INSTABILITY: NA INCOMPATIBILITY - MATERIALS TO AVOID: NA HAZARDOUS DECOMPOSITION OR BYPRODUCTS: When subjected to flaming conditions, carb] Will not occur		des of nitrogen	and cyanide	s.	
SECTION VI - HEALTH HAT	ARD DATA	· · · · · · · · · · · · · · · · · · ·				
ROUTE(S) OF ENTRY: Inhalation? Yes Ski HEALTH HAZARDS (Acute and Chronic): Eye contact - Mechanical only; Skin contact Inhalation - Dust may be irritating to the 10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not	respiratory system.	Ingestions Abrasive pa	No Other:	e Limit, OS	HA-respirable	fraction

- Lic. to Kar Products -

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP?

IARC Monographs?

RECOMMENDED EXPOSURE LIMITS:

OSHA Regulated? LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plently of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide

fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NA

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

OTHER PRECAUTIONS:

NA

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.

VENTILATION:

LOCAL EXHAUST: See "Respiratory Protection".

SPECIAL:

MECHANICAL (GENERAL):

OTHER:

PROTECTIVE GLOVES:

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

WORK/HYGIENIC/MAINTENANCE PRACTICES:

EYE PROTECTION: See Section IX.

SECTION IX - ADDITIONAL COMMENTS

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

PRODUCT CODE: 79970 - 79972 PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493) This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): SURFACE CONDITIONING DISCS(77960-77962)(83488-83493

- PRODUCT IDENTIFICATION SECTION I TELEPHONE NUMBERS: MANUFACTURERS NAME AND ADDRESS: (800)752-7869 KAR PRODUCTS Rush Poison Control Date Entered: 02/15/92 Last Revision: 03/24/94 461 N. Third Avenue Emergency:) (708) 296-6111 MSDS Printed: 02/22/95 Des Plaines, IL. 60016 Information: SYNONYMS: CHEMICAL FAMILY: HAZARD LABEL: MOLECULAR FORMULA: MOLECULAR WEIGHT: NE or NA SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME) OSHA PEL OTHER LIMITS CAS # ACGIH TLV PERCENTAGE Nylon Fibers NA NA 5.0 - 35.0 0.0 - 33.0 9003-35-4 NA PHENOL-FORMALDEHYDE 9011-14-7 POLY (METHYL METHACRYLATE) NA 0.0 - 33.0Epoxy Resin NA NA 0.0 - 33.0Abrasive particles NΑ 10mg/m3(TWA) 10.0 - 65.0 SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS SPECIFIC GRAVITY (WATER = 1): BOILING POINT: NE or NA MELTING POINT: VAPOR PRESSURE (MM HG): . . . NA VAPOR DENSITY (AIR=1):. . . . NA 1 Gas EVAPORATION RATE: . PHYSICAL STATES: [NA] Liquid (Butyl Acetate=1) SOLUBILITY IN WATER: [X] Solid Insoluble PERCENT VOLATILE: 0.0 % by weight. APPEARANCE AND ODOR: Non-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resinous binders. Viscosity: NA SECTION IV - FIRE AND EXPLOSION HAZARD DATA METHOD USED: NA EXPLOSIVE LIMITS: LEL: NA FLASH PT: NE or NA UEL: NA EXTINGUISHING MEDIA: Water, carbon dioxide, foam, dry chemical. SPECIAL FIRE FIGHTING PROCEDURES: NA UNUSUAL FIRE AND EXPLOSION HAZARDS: NA SECTION V - REACTIVITY DATA Stable [X] STABILITY: Unstable [CONDITIONS TO AVOID - INSTABILITY: INCOMPATIBILITY - MATERIALS TO AVOID: NA HAZARDOUS DECOMPOSITION OR BYPRODUCTS: When subjected to flaming conditions, carbon dioxide, carbon monixide, oxides of nitrogen and cyanides. HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X] CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION: - HEALTH HAZARD DATA SECTION VI ROUTE(S) OF ENTRY: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? No Other: **HEALTH HAZARDS (Acute and Chronic):** Eye contact - Mechanical only; Skin contact - Mechanical only; Inhalation - Dust may be irritating to the respiratory system. Abrasive particles Exposure Limit, OSHA-respirable fraction 10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not applicable.

-- Lic. to Kar Products --

4:

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP?

IARC Monographs?

OSHA Regulated? LD 50/LC 50:

RECOMMENDED EXPOSURE LIMITS:

SIGNS AND SYMPTOMS OF EXPOSURE:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plently of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

NΑ

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

NA

OTHER PRECAUTIONS:

N/

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.

VENTILATION:

LOCAL EXHAUST: See "Respiratory Protection".

SPECIAL:

MECHANICAL (GENERAL):

OTHER:
EYE PROTECTION: See Section IX.

PROTECTIVE GLOVES:
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - ADDITIONAL COMMENTS

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

PRODUCT CODE: 79970 - 79972

- Lic. to Kar Products -

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

This form may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

IDENTITY (As Used on Label and List): SURFACE CONDITIONING DISCS (77960-77962) (83488-83493

- PRODUCT IDENTIFICATION MANUFACTURERS NAME AND ADDRESS: TELEPHONE NUMBERS: Rush Poison Control (800)752-7869 Date Entered: 02/15/92 KAR PRODUCTS) Last Revision: 03/24/94 461 N. Third Avenue Emergency: (708)296-6111 Des Plaines, IL. 60016 Information: MSDS Printed: 02/22/95 SYNONYMS: CHEMICAL FAMILY: HAZARD LABEL: MOLECULAR FORMULA: MOLECULAR WEIGHT: NE or NA HAZARDOUS INGREDIENTS/IDENTITY INFORMATION SECTION II HAZARDOUS COMPONENTS (SPECIFIC CHEMICAL IDENTITY/COMMON NAME) OSHA PEL OTHER LIMITS **PERCENTAGE** CAS # ACGIH TLV 5.0 - 35.0 0.0 - 33.0 Nylon Fibers МΔ NA PHENOL-FORMALDEHYDE 9003-35-4 NA 9011-14-7 0.0 - 33.0POLY (METHYL METHACRYLATE) NΔ Epoxy Resin NA NA 0.0 - 33.010.0 - 65.0 NA 10mg/m3(TWA) Abrasive particles SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS BOILING POINT: NE or NA SPECIFIC GRAVITY (WATER = 1): VAPOR PRESSURE (MN HG): . . . MELTING POINT: NA VAPOR DENSITY (AIR=1):. . . . NA PHYSICAL STATES: C] Gas EVAPORATION RATE: NA] Liquid (Butyl Acetate=1) SOLUBILITY IN WATER: [X] Solid Insoluble 0.0 % PERCENT VOLATILE: by weight. APPEARANCE AND ODOR: Non-woven fibrous articles impregnated with abrasive particles which are bonded together with cured resinous binders. Viscosity: NA SECTION IV -- FIRE AND EXPLOSION HAZARD DATA FLASH PT: NE or NA METHOD USED: NA EXPLOSIVE LIMITS: LEL: NA UEL: NA EXTINGUISHING MEDIA: Water, carbon dioxide, foam, dry chemical. SPECIAL FIRE FIGHTING PROCEDURES: UNUSUAL FIRE AND EXPLOSION HAZARDS: NA - REACTIVITY DATA SECTION V Stable [X] STABILITY: Unstable [CONDITIONS TO AVOID - INSTABILITY: NA INCOMPATIBILITY - MATERIALS TO AVOID: NA HAZARDOUS DECOMPOSITION OR BYPRODUCTS: When subjected to flaming conditions, carbon dioxide, carbon monixide, oxides of nitrogen and cyanides. HAZARDOUS POLYMERIZATION: May occur [] Will not occur [X] CONDITIONS TO AVOID - HAZARDOUS POLYMERIZATION: - HEALTH HAZARD DATA SECTION VI ROUTE(S) OF ENTRY: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? No Other: HEALTH HAZARDS (Acute and Chronic): Eye contact - Mechanical only; Skin contact - Mechanical only; Abrasive particles Exposure Limit, OSHA-respirable fraction Inhalation - Dust may be irritating to the respiratory system. 10mg/m3 TWA-ACGIH-10mg/m3. Ingestion: Not applicable.

:À:

PRODUCT CODE: 79970 - 79972

PRODUCT NAME: SURFACE CONDITIONING DISCS(77960-77962)(83488-83493)

CARCINOGENITY: NTP? IARC Monographs?

OSHA Regulated?

RECOMMENDED EXPOSURE LIMITS:

LD 50/LC 50:

SIGNS AND SYMPTOMS OF EXPOSURE:

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

EMERGENCY AND FIRST AID PROCEDURES:

Eye: Flush eyes with plently of water, call doctor if irritation persists. Skin: Wash with soap and water. Inhalation: Provide

fresh air. Ingestion: Not applicable.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED;

ÑΑ

WASTE DISPOSAL METHOD:

Dispose of in a sanitary landfill.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

OTHER PRECAUTIONS:

NA

SECTION VIII- CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): See Section IX.

VENTILATION:

LOCAL EXHAUST: See "Respiratory Protection".

SPECIAL: OTHER: EYE PROTECTION: See Section IX.

MECHANICAL (GENERAL): PROTECTIVE GLOVES:

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

WORK/HYGIENIC/MAINTENANCE PRACTICES:

SECTION IX - ADDITIONAL COMMENTS

Section VIII - RESPIRATORY PROTECTION: If dust is generated, avoid breathing dust, use particulate collection systems or wear approved dust mask.

EYE PROTECTION: Use protective glasses and/or face shield as recommended in ANSI Standard Z87.1.

9661 8 7, 9333





MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

1 MRREDUCTANDICOMRANMIDENTIFICATION IN THE STATE OF THE S

Material Name:

Crystalline Silica Containing Product

Common Name: Intended Use:

Insulating Firebrick and Firebrick High Temperature Thermal Insulation

Trade Names:

K-25HS, K-25XHS, K-26SE, K-26HS, K-26LI, K-28, K-28S, K-30, K-30S, K-3000, K-3000S;

Firebrick 80, 80D, 80DZ; IFB Dust

Manufacturer/Supplier:

THERMAL CERAMICS INC. P.O. BOX 923; DEPT. 300 AUGUSTA, GA 30903-0923

Product Stewardship Program: 800-722-5681 / FAX: 706-560-4053 For additional MSDS's, call our automated FAXBACK: 800-329-7444

2 COMPOSITION/INFORMATION/ON/INGREDIENTS

INGREDIENT CAS NUMBER	PERCENT	OSHA PEL	ACGIH TLV
Crystalline silica - quartz			
14808-60-7	Up to 0.3	0.1 mg/m³ (respirable)	0.1 mg/m³ (respirable)
Crystalline silica - cristobalite			
14464-46-1	0.5 - 21	0.05 mg/m³ (respirable)	0.05 mg/m³ (respirable)
Ferric oxide			
1309-37-1	0.3 - 1.5	10 mg/m³	5 mg/m³
Titanium dioxide			
13463-67-7	1.0 - 2.0	15 mg/m ³	10 mg/m³
Calcium oxide			
1305-78-8	0.1 - 1.0	5 mg/m³	2 mg/m³
Alumina			
1344-28-1	40 - 70	15 mg/m³ (total); 5 mg/m³ (respirable)	t0 mg/m³
Silica, amorphous			
7631-86-9	35 - 60	(80 mg/m ³ + % SiO ₂ **) or 20 mppcf	10 mg/m³
		•	

NOTES:

** % SiO₂ = percent of crystalline silica

(See Section 8 for Personal Protection Guidelines.)

3. HAZARDSIDENTIFICATION#

EMERGENCY OVERVIEW

" WARNING "

Cancer hazard by inhalation. [SEE BELOW]

• Dust from this product may aggravate existing chronic lung conditions such as bronchitis, emphysema and asthma.

Page 1 Of 7

MSDS No: Date Prepared: 151-2 03/28/1995 Revised/Reviewed: 06/01/1998

Possible Health Effects

Target Organs:

Eyes, skin, and respiratory system.

Primary Entry Route:

Inhalation

Acute effects:

Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to

the skin on prolonged contact.

Chronic effects:

Prolonged/repeated inhalation of respirable crystalline silica may cause delayed lung injury

(silicosis). [See Section 11 of this MSDS for more information.]

Hazard Classification:

The Seventh Annual Report on Carcinogens (1994), prepared by the National Toxicology Program (NTP), classified silica, crystalline (respirable size), as a substance which may

reasonably be anticipated to be a carcinogen.

The International Agency for Research on Cancer (IARC) has classified crystalline silica inhaled in the form of quartz or cristobalite from occupational sources as carcinogenic to humans (Group 1). This IARC Classification was based on a relatively large number of epidemiological studies that together provide sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica.

The State of California, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "silica, crystalline (airborne particles of respirable size)" as a material known to the State of California to cause cancer.

Signs and Symptoms of Overexposure:

Eye Contact:

Physical irritation, laceration.

Skin Contact:

Physical irritation.

Ingestion: Inhalation: May cause temporary irritation to the gastrointestinal tract. Decline in pulmonary function and abnormal chest x-ray.

THE PROPERTY OF THE PROPERTY O

Eve Contact:

Flush with large amounts of water for at least 15 minutes. Do not rub eyes.

Skin Contact:

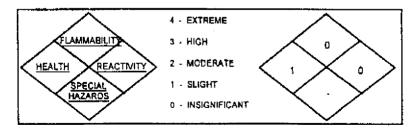
Wash affected area gently with soap and water. Skin cream or lotion after washing may be

Ingestion: Inhalation: Do not induce vomiting; drink plenty of water.

Remove affected person to clean fresh air.

** If any of the symptoms persist, seek medical attention immediately.

THE STATE REPORTED FOR THE PROPERTY OF THE PRO



NFPA Unusual Hazards:

None

Flash Point:

Non-combustible

Extinguishing Media:

Use extinguishing media appropriate to the surrounding fire.

Explosion Hazards:

Protective Equipment:

Wear NIOSH approved respirator together with other protective gear appropriate to the

surrounding fire.

Page 2 Of 7

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

6: ACCIDENTAL RELEASEMEASURES

Spill/Leak Procedures:

Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could result in water pollution.

THE THE HANDENGTANDISTORAGE SHEET

Handling:

Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

Storage:

This product is stable under all conditions of storage. Store in original factory container in a dry area. Keep container closed when not in use.

8. EXPOSURE CONTROLS/RERSONAL PROJECTION

Engineering Controls:

Use engineering controls such as ventilation and dust collection devices to reduce airborne particulate concentrations to the lowest attainable level.

Respiratory Protection:

When it is not possible or feasible to reduce airborne crystalline silica or particulate levels below the PEL through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne crystalline silica and/or dust concentrations using appropriate NiOSH analytical methods and select the respiratory protection based upon the results of that monitoring. 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) Implement respiratory protection training programs. Use NIOSH certified respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

Recommended Respiratory Protection When Handling Crystalline Silica Products

AS PRODUCED AND AFTER SERVICE

AST MODOLD AND AT TEM DEM TO	
CONCENTRATION	RESPIRATOR
Up to PEL	Disposable particulate respirator (N, R, or P, 95 rated) or half mask air purifying respirator with high efficiency (P100) filter cartridges.
> 1 to 10 times PEL	Half-mask, air-purifying respirator with high efficiency particulate air (HEPA) or P100 rated filter cartridges.
> 10 to 50 times PEL	Full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges or powered air-purifying respirator (PAPR) with HEPA or P100 rated filter cartridges.
> 50 times PEL	Full facepiece positive pressure supplied air respirator.
NOTE: For unknown exposures or when working with other contamina respirator selection.	ints, consult an industrial hygienist for air monitoring and

Page 3 Of 7

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

Protective Clothing: Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from

other clothing. Rinse washer after use, If you take work clothing home, it is recommended you

vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

Eye Protection: Goggles/safety glasses with sideshields should be worn.

DWRHYSICAUANDICHEMICALEROBERBIESE

Appearance: Chemical Family:

Solid brick or block **Aluminosilicates**

Vapor Pressure: **Boiling Point:**

Not applicable Not applicable 3190°F to 3350°F Vapor Density:

Not applicable Specific Gravity Range: Volatile by Volume (%):

0.77 - 2.4Not applicable

Melting Point: Water Solubility (%):

Not soluble in water

pH:

Not applicable

10 STABILITY AND REACHIVITY

Hazardous Polymerization:

Will not occur

Chemical Incompatibilities:

Powerful oxidizers; fluorine, manganese trioxide, oxygen disulfide

Hazardous Decomposition Products: None

11 TOXICOLOGICACINEORMATION

Epidemiology:

Crystalline silica

Results of several epidemiology studies have indicated that diseases which may be caused by the uncontrolled inhalation of crystalline silica include silicosis, pulmonary tuberculosis or industrial bronchitis. In evaluating crystalline silica as a cancer risk, the International Agency for Research on Cancer (IARC) reviewed several studies from different industries and concluded that crystalline silica from occupational sources inhaled in the form of quartz or cristobalite is carcinogenic to humans (Group 1) [IARC Monograph; Vol. 68; June 1997]. However, in reaching its conclusion, IARC stated that the carcinogenicity in humans could not be found in all industries reviewed and that carcinogenicity might be dependent on inherent characteristics of crystalline silica or on external factors affecting biological activity (e.g., cigarette smoking) or distribution of its polymorphs.

Toxicology:

- Crystalline silica

There is sufficient evidence of carcinogenicity of respirable silica in experimental animals (IARC Monograph; Vol. 42; 1987 and IARC Monograph; Vol. 68; 1997). [Inhalation and intratracheal installation of crystalline silica in rats caused lung cancer; however, studies in other species such as mice and hamsters caused no lung cancer. Crystalline silica also caused fibrosis in rats and hamsters in several inhalation and intratracheal installation studies.

12 MECOLOGICA BINFORMATION BRIDGE SERVICE SERV

Adverse effects of this material on the environment are not anticipated.

13 POIS POSALEINE GRMARION WARE TO THE TRANSPORT OF THE PROPERTY OF THE PROPER

Waste Management:

To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA:

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261,20-24).

Page 4 Of 7

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

14 TRANSBORTHNEORMATION

Department of Transportation (D.O.T.):

Hazard Class: Labels: Not regulated

Placards:

Not applicable Not applicable

Bill of Lading:

Product name

United Nations (UN) Number:

Not applicable

North America (NA) Number: 1

Not applicable

15: REGULATORMINEORMATION

United States Regulations

SARA Title III:

This product does not contain any substances reportable under Sections 302, 304, 313 (40

CFR 372). Sections 311 and 312 apply.

OSHA:

Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication

Standard.

TSCA:

All substances contained in this product are listed in the TSCA Chemical Inventory [Section

8(b)].

California:

Listed as "Silica, crystalline (airborne particles of respirable size)" Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986. Known to the State of California to cause

cancer

Other States:

Crystalline silica products are not known to be regulated by states other than California;

however, state and local OSHA and EPA regulations may apply to these products. Contact

your local agency if in doubt.

International Regulations

Canadian WHMIS:

Class D-2A Materials Causing Other Toxic Effects

Canadian EPA:

All substances in this product are listed, as required, on the Domestic Substance List (DSL).

EXAMPLE OTHERNINE ORNATION MANUFACTURE

Precautionary Measures to be Taken After Service and Upon Removal:

Amorphous silica may transform to crystalline silica when subjected to temperatures exceeding 1800° F. Therefore, the content of crystalline silica may be higher than originally stated in Section 2. Users should observe good industrial hygiene and work practices to reduce employees' exposure when handling after service products.

HMIS Hazard Rating:

HMIS Acute Health:

1*

HMIS Flammable:

Ó

HMIS Reactivity:

0

HMIS Personal Protective:

To be supplied by user depending upon use

*See Section 3 of the MSDS for possible chronic health effects.

SARA Title III Hazard Categories:

Acute Health:

Yes Yes Pressure Hazard:

Νo

Chronic Health: Fire Hazard:

No

Reactivity Hazard:

No

Page 5 Of 7

THERMAL CERAMICS

PAGE. 021

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

Definitions:

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstracts Service Registry Number

EPA: Environmental Protection Agency f/cc: Fibers per cubic centimeter
HEPA: High Efficiency Particulate Air

HMIS: Hazardous Materials Identification System

mg/m3: Milligrams per cubic meter of air
mppcf: Million particles per cubic meter
MSHA: Mine Safety and Health Administration
NFPA: National Fire Protection Association

NIOSH: National Institute for Occupational Safety and Health
OSHA: Occupational Safety and Health Administration
RCRA: Resource Conservation and Recovery Act
SARA: Superfund Amendments and Reauthorization Act
Title III: Emergency Planning and Community Right to Know Act

...Section 302: Extremely Hazardous Substances

...Section 304: Emergency Release ...Section 311: MSDS/List of Chemicals

...Section 312: Emergency and Hazardous Inventory ...Section 313: Toxic Chemicals Release Reporting

STEL: Short-Term Exposure Limit

TCLP: Toxicity Characteristics Leaching Procedures (EPA)

TLV: Threshold Limit Values (ACGIH)
TSCA: Toxic Substance Control Act

WHMIS: Workplace Hazardous Materials Information System (Canada)

29 CFR 1910.134 & 1926.103:

OSHA Respiratory Protection Standard

29 CFR 1910.1200 & 1926.59:

OSHA Hazard Communications Standard

Revisions: Replaces revision 03/23/98. Revised Respiratory Protection in Section 8 with updated information.

Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

PRODUCT SAFETY INFORMATION

CRYSTALLINE SILICA CONTAINING PRODUCT (Quartz CAS #14808-60-7 And/Or Cristobalite CAS #14464-46-1)

WARNING:

• This product contains crystalline silica, which has been identified by the International Agency for Research on Cancer (IARC) as a known carcinogen to humans.

Avoid breathing particulates and dust

RISKS:

- · Cancer hazard by inhalation.
- May cause silicosis (lung disease) by inhalation.
- May cause temporary irritation to eyes, skin and respiratory tract.

PRECAUTIONARY MEASURES:

- · Minimize airborne particulates and dust with engineering controls.
- Wear a NIOSH certified respirator.
- Wear long sleeved, loose-fitting clothing, eye protection, and gloves.
- Wash work clothing separately and rinse washing machine after use.

FIRST AID MEASURES:

Eyes:

Flush with Water.

Skin:

Wash with soap and warm water.

Ingestion:

Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop.

Inhalation:

Remove to fresh clean air.

If any of the above irritations persists, seek medical attention immediately.

FOR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES, REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS).

THERMAL CERAMICS INC. P.O. BOX 923 DEPT. 300 AUGUSTA, GA 30903-0923 (800) 722-5681



Canadian WHMIS Class D-2A: Material causing other toxic effects.

Label No:

2-0895 (Rev. 04/98)

Page 7 Of 7



MSDS Number: 151-2

March 28, 1995

Date Prepared: Date Revised: December 1, 1995

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT NAME

Material Name:

Crystalline Silica Containing Product

Common Name: Intended Use:

Insulating Firebrick and Firebrick High temperature thermal insulation

Trade Names:

K-25HS, K-25XHS, K-26S, K-26SE, K-26HS, K-26LI, K-28, K-28S, K-30, K-30S, K-3000, K-

3000S, 80FB, 80D FB

Manufacturer/Supplier

THERMAL CERAMICS INC. P. O. BOX 923 DEPT, 300 **AUGUSTA, GA 30903**

Product Stewardship Program 800-722-5681 FAX 706-560-4053

INGREDIENT NAME	CAS NUMBER	PERCENT	OSHA PEL
Silica, crystalline**			
- quartz	14808-60-7	Up to 0.3	0.1 mg/m³ (respirable dust)
 cristobalite 	14464-46-1	0.5 - 21	0.05 mg/m³ (respirable dust)
Ferric Oxide	1309-37-1	0.3 - 1.5	IO mg/m³
Titanium Oxide	13463-67-7	1.0 - 2.0	10 mg/m³
Calcium Oxide	1305 - 78-8	0.1 - 1.0	5 mg/m³
Alumina	1344-28-1	40 - 70	15 mg/m ¹ (total dust) 5 mg/m ³ (respirable dust)
Silica, Amorphous	7631-86-9	35 - 60	6 mg/m³

^{**} Crystalline silica may be present in after service material exposed to temperatures above 1800°F for a long period of time.

(NOTE: See Section 8 of this MSDS for Personal Protection Guidelines)

SECTION 3 = HAZARDS IDENTIFICATION

Possible

health effects:

Dust from this product may aggravate existing chronic lung conditions such as bronchitis, emphysema

and asthma.

Target organs:

Eyes, skin, and respiratory system

Primary entry route:

Inhalation

Acute effects:

Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to the skin

on prolonged contact.

Chronic effects:

Prolonged/repeated inhalation of respirable free crystalline silica dust may cause delayed lung injury

(silicosis). IARC has placed crystalline silica in category 2A (IARC believes there is sufficient evidence

of carcinogenicity in animals but evidence of the carcinogenicity to humans is limited).

Signs and symptoms of overexposure:

Eye contact:

Physical irritation, laceration

Skin contact:

Physical irritation

Ingestion: Inhalation: May cause temporary irritation to the gastrointestinal tract Decline in pulmonary function and abnormal chest x-ray



MSDS Number: 151-2

Date Prepared: Date Revised:

March 28, 1995 December 1, 1995

MATERIAL SAFETY DATA SHEET

SECTION 4 - FIRST AID

Eve contact:

Flush with large amounts of water for at least 15 minutes. Do not rub eyes.

Skin contact:

Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.

Ingestion: Inhalation: Do not induce vomiting; drink plenty of water. Remove affected person to clean fresh air.

If any of the symptoms persist, seek medical attention immediately

SECTION 5 - FIRE FIGHTING MEASURES

Flash point:

Non-combustible

Extinguishing media:

Use extinguishing media appropriate to the surrounding fire.

Explosion hazards:

Fire fighting protective equipment:

Wear full bunker gear including positive pressure self-contained breathing apparatus.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spill/leak procedures:

Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could result in water pollution.

SECTION 7 - HANDLING AND STORAGE

Handling:

Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

Storage:

This product is stable under all conditions of storage. Store in original factory container in a dry area.

Keep container closed when not in use.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls:

Use engineering controls such as ventilation and dust collection devices to reduce airborne particulate concentrations to the lowest attainable level.

Protective clothing:

Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

Eye protection:

Goggles/safety glasses with sideshields should be worn.

Respiratory protection:

When it is not possible or feasible to reduce airborne crystalline silica or particulate levels below the PEL through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne crystalline silica and dust concentrations using appropriate NIOSH analytical methods and select the respiratory protect. based upon the results of that monitoring, 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH/MSHA approved respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment.

Page 2 of 6



MSDS Number:

Date Prepared: Date Revised:

March 28, 1995

December 1, 1995

MATERIAL SAFETY DATA SHEET

Minimum Acceptable Respiratory Protection When Handling Crystalline Silica Containing Product

AS PRODUCED AND AFTER SERVICE

CONCENTRATION

RESPIRATOR

Up to PEL

RECOMMENDED: Disposable

dust/mist respirator (e.g. 3M 9900)

Up to 10 times PEL

Disposable dust/mist respirator (e.g. 3M 9900) or half-face, air-purifying respirator equipped with high efficiency particulate air

(HEPA) filter cartridges (e.g. 3M 6000 Series)

Up to 50 times PEL

Full-face air-purifying respirator equipped with high-efficiency particulate air (HEPA) filter cartridges (e.g. 3M 7800 with 7255 filters) or powered airpurifying respirator (PARR) equipped with HEPA filter cartridges (e.g. 3M W3265S with

W3267 filters)

Greater than 50 times PEL Full-face positive pressure supplied air respirator (e.g. 3M) 7800 with W9435 hose and W3196 regulator)

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Solid brick or block

Vapor pressure:

Not applicable

Boiling point:

Not applicable

Vapor density:

Not applicable

Melting point:

3190°F to 3350°F

Specific gravity range:

0.77 - 2.4

Water solubility (%):

Not soluble in water

% Volatile by volume:

Not applicable

Chemical family:

Aluminosilicates

Not applicable

Hazardous polymerization:

Will not occur.

Chemical incompatibilities: Powerful oxidizers; fluorine, manganese trioxide, oxygen disulfide

Hazardous decomposition

products:

None

MSDS Number: 151-2

Date Prepared: Date Revised: March 28, 1995 December 1, 1995

MATERIAL SAFETY DATA SHEET

SECTION 11 - TOXICOLOGICAL INFORMATION

Epidemiology:

An IARC Working Group reported that there is limited evidence for the carcinogenicity of crystalline silica in humans (IARC S.7, 1987; IARC V.42.1987). A number of studies have investigated the occurrence of lung cancer in persons diagnosed as having silicosis after occupational exposure to dust containing respirable crystalline silica. Of three case-control studies, two showed an association between silicosis and lung cancer. Seven cohort studies and one proportionate mortality study all demonstrated that lung cancer occurs more frequently in silicotics than in the general population.

This increase has been seen among miners, quarry workers, foundry workers, ceramic workers, granite workers, and stone cutters. In some of these studies, the risk of lung cancer increased with duration employment. Only rarely, however, were data obtained on smoking and on potential confounding exposures and the comparability of the referent population assured (IARC V.42.1987; IARC S.7.1987).

Toxicology:

There is sufficient evidence for the carcinogenicity of respirable crystalline silica in experimental animals (IARC V.42,1987; IARC S.7, 1987). When administered by inhalation, quartz (CAS #14808-60-7) induced significant increases in the incidence of adenocarcinomas and squamous cell carcinomas of the lungs in rats of both sexes in one study and female rats (nose only inhalation) in another study. In three studies in which quartz was administered by single or repeated intratracheal instillation, there was a significant increase in the incidence of adenocarcinomas and squamous cell carcinomas in rats.

Different specimens of quartz, with particles in the respirable range, were tested in the inhalation and intratracheal instillation studies. No pulmonary tumor was observed in hamsters in four experiments using repeated intratracheal instillation of quartz dusts. When administered as a single interpleural or intraperitoneal injection, suspensions of several types of quartz induced thoracic and abdominal malignant lymphomas, primarily of the histiocytic type, in rats of both sexes.

When administered as a single intrapleural injection, cristobalite (CAS #14464-46-1) or tridymite (CAS #15468-32-3), with particles in the respirable range, induced malignant lymphomas, primarily of the histiocytic type, in rats of both sexes. When administered as a single intravenous injection, one sample of quartz failed to induce a significant difference in the presence or multiplicity of pulmonary adenomas in strain A mice of both sexes.

SECTION 12 - ECOLOGICAL INFORMATION

Adverse effects of this material on the environment are not anticipated.

SECTION 13 - DISPOSAL INFORMATION

Waste management/ disposal:

To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill, Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA:

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).



MSDS Number: 151-2

Date Prepared: Date Revised:

March 28, 1995 December 1, 1995

MATERIAL SAFETY DATA SHEET

SECTION 14 - TRANSPORT INFORMATION

Department of Transportation (D.O.T.):

Hazard class:

Not regulated

Labels:

Not applicable

Placards: Bill of lading: Not applicable Product name

United Nations (UN) Number: North America (NA) Number:

Not applicable Not applicable

SECTION 15 - REGULATORY INFORMATION

SARA Title III: This product does not contain any substances reportable under Sections 302, 304, 313 (40 CFR 372).

Sections 311 and 312 apply.

OSHA: Comply with Hazard Communication Standard 29 CFR 1910.1200 and 29 CFR 1926.59, Respiratory

Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are

considered to be hazardous as defined by the OSHA Hazard Communication Standard.

TSCA: All substances contained in this product are listed in the TSCA Chemical Inventory [Section 8(b)].

California: Listed as "Silica, Crystalline (airborne particles of respirable size)" Proposition 65, The Safe Drinking

Water and Toxic Enforcement Act of 1986.

SECTION 16 - OTHER INFORMAT

Precautions To Be Taken After Service and Upon Removal:

Removal of this product after service may generate respirable dust. Prolonged/repeated inhalation of respirable free crystalline silica dust may cause delayed lung injury (silicosis). IARC has placed crystalline silica in Category 2A, a probable carcinogen (IARC believes there is sufficient evidence of carcinogenicity in animals but evidence of the carcinogenicity to humans is limited). The OSHA PEL for respirable cristobalite is 0.05 mg/m³. Appropriate ventilation and respiratory protection should be provided in compliance with OSHA Standards.

HMIS and NFPA Hazard Rating:

Category	<u>HMIS</u>	<u>NFPA</u>
Acute Health	1*	1
Flammability	0	0
Reactivity	0	0

NFPA Unusual Hazards: None

HMIS Personal Protection: To be supplied by user depending upon use.

*See detail information on MSDS for possible chronic health effects.

SARA Title III Hazard Categories:

Acute Health:	Yes	Pressure Hazard:	No
Chronic Health:	Yes	Reactivity Hazard:	No
Fire Hazard:	No		

MSDS Number: 151-2

RECEIVED

NOV 18 1996

Date Prepared: Date Revised:

BY:

March 28, 1995 December 1, 1995

MATERIAL SAFETY DATA SHEET

Definitions:

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstracts Service Registry Number

EPA: Environmental Protection Agency f/cc: Fibers per cubic centimeter HEPA: High Efficiency Particulate Air

HMIS: Hazardous Materials Identification System

Milligrams per cubic meter of air mg/m3: M\$HA: Mine Safety and Health Administration NFPA: National Fire Protection Association

NIOSH: National Institute for Occupational Safety and Health OSHA: Occupational Safety and Health Administration RCRA:

Resource Conservation & Recovery Act Superfund Amendments and Reauthorization Act SARA:

TITLE III: Emergency Planning and Community Right To Know Act

Section 302: Extremely Hazardous Substances

Emergency Release Section 304:

MSDS/List of Chemicals Section 311:

Section 312: Emergency and Hazardous Inventory Section 313: Toxic Chemicals Release Reporting

STEL: Short-Term Exposure Limit

TCLP: Toxicity Characteristics Leaching Procedures (EPA)

TLV: Threshold Limit Values (ACGIH) Toxic Substance Control Act TSCA:

29 CFR 1910.134 and 29 CFR 1926.103:

OSHA Respiratory Protection Standard 29 CFR 1910.1200 and 29 CFR 1926.59: OSHA Hazard Communications Standard

PRODUCT SAFETY INFORMATION

Crystalline Silica Containing Product (Quartz CAS #14808-60-7 And/Or Cristobalite CAS #14484-48-1)

WARNING: This product contains a substance which has been identified by the International Agency for Research on Cancer ((ARC) as a probable car

Avoid breathing particulates and dust

RISKS-

ISPA:3:

• Probable cancer hazard by inhalation.

• May cause sticcass (lung disease) by inhalation.

• May cause temporary intration to eyes, skin and respiratory tract.

PRECAUTIONARY MEASURES:

Minimize anthorne particulates and dust with engineering controls. Wear a NIOSH/MSHA approved respirator. Wear long stereord toge-inting clothing, eye protection and gloves, Wash work clothing separately and rinse washing machine after use.

FIRST AID MEASURES:

(year flush with water, Skin: wash with soad and warm water, Ingestion) to not loube vomiting. Get medical attention if gastrointesbral symptoms develop, rhalations ramque to fresh clean air.

OR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES REFER TO THE MATERIAL SAFETY DATA SHEET (MSDS)

THERMAL CERAMICS P.O. BOX 923 MS 300 Augusta, GA 30903 USA (800) 222-5681

el: 2-0895

RENSEIGNEMENTS SUR LA

SÉCURITÉS DES PRODUITS Contenant De La Silice Cristalline (Quanz CAS #14806-60-7 ET/OU Cristobaüta CAS #14464-46-1)

ATTENTION: Ce produit content une substance identifée par la Centre international de Recherche sur le Cander (IARC) comme un probable caronogène aux humains.

Évitez de respirer les particules et la poussière

RISQUES:

(ISQUEES: - Risques drobable de cancer par l'inhalanon. - L'inhalation peut causer la pilicosa imalacia de poumori). - Peut causer una imitation temporaire des yeux, de la peau at das voles

MESURES PRÉVENTIVES:

Administration or The VENT I VEDS:

Minimised is controlles at its possissive on suspension dans (fair dar des fechniques d'impanière).

Portez un responsée par NIOSH/MSHA,

Portez des vétements ambies a manches longues, une protection oculaire et des gétaits.

Lavaz les vétements de travail separément et nincez l'appareir laveuse sores chaque unitération.

PREMIERS SOINS:

POUR RENSÉIGNÉMENTS SUPPLÉMENTAIRES SUR LE PRODUIT ÉT PRATIQUES DE TRAVAIL VOIR LA FICHÉ S'GNAU-TIQUE (PS)

THERMAL CERAMICS P.O. Box 923 MS 300 Augusta, GA 30903 USA (705) 798-4200

INFORMACION SOBRE

SEGURIDAD DE PRODUCTO Producto Contiene Silice Cristalino (Cuarzo CAS #14808-60-7 Y/O Cristobalita CAS #1484-48-1)

AVISO: Este producto contiene una sustancia que na sido identificada por l Agencia Internacional pará ta investigación del Cánder (IARC) como un propacie canciangeno a los sens numanos.

RIESGOS:

Probable péligro de cáncer por Inhalación.
 Puede causar silicosis (enfermedad de los pulmones) por inhalación
 Puede causar infleción temporent de los ojos, piel y via respiratóna.

MEDIDAS OF PRECAUCION.

INICUIDAN DE PRECAUCION:

Minimar las particulas y poivo en el airó con controles de ingenuer

Lise un respirador procedo por NIGSHMSHA.

Use ropa holgada con mangas largas, protección para los ojos y gu

Lave la ropa de trabajo separado y enjuage la máquina lavadora de
de usaria.

MEDIDAS DE PRIMEROS AUXILIOS: Ojos: enjuague con agua limpia. Piet: lave con jacon Ingasardon: no induzta el voimos. Busque attención medica : gastrantestinates i Inhulación: resolve aire (resolve) y limbo.

Si cersisten cuziquera de las virtaciones mencionadas, butqua atençãos mi

PARA MAYOR INFORMACION SOBRE LOS PRODUCTOS Y NORMAS DE TRABAJO

CONSULTE LA HOJA DE DATOS DE SEGURIDAD DE MATERIALES

THERMAL CERAMICS RO. 80x 923 MS 300 Augusta, QA 30903 USA (708) 798-4200

Revisions: Replaces Revision dated June 6, 1995. New three language label.

Label: 2-0895.

Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.



REPORT NUMBER: 703 1808 NO: 0X622680 IFFECTIVE DATE: 04/21/95

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET PAGE: 001

VERSION: 003

PREDUCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 323776 PROD NO : 503030

ASH GROVE CEMENT 13939 N. RIVERGATE BLVD P 0 BOX 03007

PORTLAND , OR 97203

JAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR 3100 CARILLON POINT , KIRKLAND

(206)889-3400

. WA 98033

-----EMERGENCY ASSISTANCE ------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMTREC (800)424-9300

PRODUCT NAME: SODIUM HYPOCHLORITE 7-15%

1SDS #: 0X622680

Τ. PRODUCT IDENTIFICATION

PRODUCT NAME: SODIUM HYPOCHLORITE 7-15%

SYNONYMS: Liquid chlorine, liquid bleach, Pure Chlor, Sunny Sol 150

CHEMICAL FAMILY: Hypochlorite

FORMULA: NaOCl in water

DESCRIPTION: Swimming pool chlorinator, Microbiocide

OSHA HAZARO CLASSIFICATION: Oxidizer, unstable (reactive), corrosive to skin and eyes, lung toxin

II. COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Sodium hypochlorite

CAS NUMBER: 7681-52-9

PERCENTAGE RANGE: 7-15

HAZARDOUS PER 29 CFR 1910.1200: Yes

_EXPOSURE STANDARDS: None Established

CAS or CHEMICAL NAME: Water

CAS NUMBER: 7732-18-5

PERCENTAGE RANGE: 73-87

MAY 15 INS

REPORT NUMBER: 703

IFFECTIVE DATE: 04/21/95

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

PAGE: 002

VERSION: 003

'Rb-JCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 323776 PROD NO: 503030

ACGIH(TLV)

ppm mg/cubic-meter

None Established 2

None Established

HAZARDOUS PER 29 CFR 1910.1200: No EXPOSURE STANDARDS: None Established CAS or CHEMICAL NAME: Sodium hydroxide CAS NUMBER: 1310-73-2 PERCENTAGE RANGE: 0.5-2.5 HAZARDOUS PER 29 CFR 1910.1200: Yes EXPOSURE STANDARDS:

OSHA (PEL.)

ppm mg/cubic-meter

None Established

CETLING:

TWA:

2

STEL: None Established

CAS or CHEMICAL NAME: Sodium chloride

CAS NUMBER: 7647-14-5

PERCENTAGE RANGE: 5.0-11.0

HAZARDOUS PER 27 CFR 1910.1200: No EXPOSURE STANDARDS: None Established

III. PRECAUTIONS FOR SAFE HANDLING AND STORAGE
DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN OR EYES, UPON CONTACT
WITH SKIN OR EYES, WASH OFF WITH WATER
STORAGE CONDITIONS: Store in a cool, dry, well-ventilated area. Avoid high
temperatures and exposure to and direct sunlight.

DO NOT STORE AT TEMPERATURES ABOVE: 15-21 Deg.C (60-70 Deg.F)
OTHER: Store in the dark at the lowest possible temperature, but keep
from freezing.

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: Up to 6 menths at 60 Deg.F. or lower INCOMPATIBLE MATERIALS FOR PACKAGING: Metal containers INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Oxidizers, acids, nitrogen containing materials such as quaternary ammonium salts.

IV. PHYSICAL DATA

APPEARANCE: Greenish-yellow liquid

FREEZING POINT: No Data

BOILING POINT: Decomposes on heating

DECOMPOSITION TEMPERATURE: Decomposes as heated

SPECIFIC GRAVITY: 1.08-1.26 BULK DENSITY: Not Applicable

pH @ 25 DEG.C: > 11

VAPOR PRESSURE @ 25 DEG.C: No Data

SOLUBILITY IN WATER: Miscible

VOLATILES, PERCENT BY VOLUME: 87.5-94.5

FTAPORATION RATE: No Data

_'OR DENSITY: No Data

MOLECULAR WEIGHT: 74.5 (active ingredient-NaOC1)

ODOR: Chlorine-like

COEFFICIENT OF DIL/WATER DISTRIBUTION: No Data

MAY 15 1995

EPORT NUMBER: 703 SDS NO: 0X622680

FFECTIVE DATE: 04/21/95

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

PAGE: 003

VERSION: 003

RW-JCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 323776 PROD NO : 503030

V. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Respirator protection not normally needed since the volatility and toxicity are low. If vapors,

mists, or aerosols are generated, wear a NIOSH/

MSHA approved respirator.

VENTILATION: Local exhaust ventilation is recommended if vapors, mists

or aerosols are generated. Otherwise, use general exhaust

ventilation.

SKIN PROTECTIVE EQUIPMENT: Use chemical safety goggles and impermeable

gloves.

EQUIPMENT SPECIFICATIONS:

RESPIRATOR TYPE: NIOSH/MSHA approved respirator equipped with

chemical cartridges for protection against chlorine

gas and dust mist pre-filters.

GLOVE TYPE: Neoprene

BOOT TYPE: Not normally needed PRON TYPE: Not normally needed

TPROTECTIVE SUIT: Not normally needed

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

FLAMMABLE: Νo COMBUSTIBLE: Νo PYROPHORIC: Νo

FLASH POINT: Not Applicable

AUTOIGNITION TEMPERATURE : Not Applicable

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT

VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

NEPA RATINGS: Not Established

HMIS RATINGS:

Health: 3 Flammability: 0 2 Reactivity:

EXTINGUISHING MEDIA: Not applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. On small fire, use dry chemical, Carbon dioxide or water spray. On large fires, use water in flooding quantities as fog. In case of fire, hazardous concentrations of chlorine may be formed. See Section

XI for personal protective equipment for fire fighting.

VII. REACTIVITY INFORMATION

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE

EMPERATURES ABOVE: Decomposes as it is heated

MECHANICAL SHOCK OR IMPACT: No.

ELECTRICAL (STATIC) DISCHARGE: No.

OTHER: Decomposition will result from contact with iron or copper of

REPORT NUMBER: 703 19DS NO: 0X622680 REFECTIVE DATE: 04/21/95 VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET PAGE: 004

VERSION: 003.

'R_JCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 323776 PROD NO: 503030

HAZARDOUS POLYMERIZATION: Will not occur

INCOMPATIBLE MATERIALS: Iron, copper, acids, ammonium compounds,

organics, other oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine gas

OTHER CONDITIONS TO AVOID: High heat, sunlight and ultra-violet light

SUMMARY OF REACTIVITY:

OXIDIZER:

705

PYROPHORIC:

Nο

ORGANIC PEROXIDE: WATER REACTIVE:

No No

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

PROESTION: Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

IX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, skin, eye, ingestion

WARNING STATEMENTS AND WARNING PROPERTIES

HARMFUL IN INHALED OR INGESTED, HARMFUL IF EXPOSED TO SKIN OR EYES. HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: Approximately 0.9 mg/m3 (0.3 ppm) based on odor of chlorine.

TRRITATION THRESHOLD: There is no data for irritation threshold. Sodium hypochlorite has the potential to be immediately dangerous to life or bealth

NS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

Inhalation of this material is irritating to the nose, mouth, throat

EPORT NUMBER: 703 SDS NO: 0X622680 VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET

FFECTIVE DATE: 04/21/95

PAGE: 005

VERSION: 003

ROWJET: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 323776 PROD NO: 503030

and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage.

CHRONIC:
Repeated inhalation exposure may cause impairment of lung function and permanent lung damage.

EYE

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

SKIN

ACUTE:

Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin at site of contact to regenerate.

CHRONIC:

Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction. INGESTION

ACUTE:

Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration.

CHRONIC:

There are no known or reported effects from chronic exposure. MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Asthma and respiratory and cardiovascular disease INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY None known or reported.

ANIMAL TOXICOLOGY

ACUTE TOXICITY:

INHALATION LC50: No available data

ORAL LD50: Approximately 3-5 g/kg (rat)

DERMAL LD50: > 2 g/kg (rabbit)

Causes burns to eyes and skin

AQUATIC TOXICITY:

Aquatic LC50 - approximately 0.6 mg/l (bluegill) approximately 1 mg/l (daphnia, 48 hours)

CHRONIC TOXICITY:

There are no known or reported effects from repeated exposure.

REPRODUCTIVE TOXICITY:

There are no known or reported effects on reproductive function or fetal development.

CARCINOGENICITY:

This product has been shown not to be carcinogenic. It is not included as a carcinogen by IARC, OSHA, NTP, or EPA.

REPORT NUMBER: 703

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET PAGE: 006

VERSION: 003

IFFECTIVE DATE: 04/21/95

'R%_JCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 323776 PROD NO: 503030

MUTAGENICITY:

Sodium hypochlorite has been shown to produce damage to genetic material when tested in vitro. Studies in vivo have shown no evidence of mutagenic potential for this material. Chemicals with potent biocidal activity, typical of hypochlorite compounds, may compromise the integrity of many of the treated cells which remain viable during an in vitro assay. This result would likely produce cellular changes giving rise to a response indicative of mutation. It is judged that the risk of genetic damage is insignificant for sodium hypochlorite because of its biocidal activity, lack of mutagenicity in vivo, and failure to produce a carcinogenic response.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:

LAND (U.S. DOT): HYPOCHLORITE SOLUTIONS, 8, UN1791, PG II

WATER (IMO): Same as above AIR (IATA/ICAO): Same as above

: TARD LABEL/PLACARD: CORROSIVE REPORTABLE QUANTITY: 100 lbs. (Per 49 CFR 172.101, Appendix)

EMERGENCY GUIDE NO: 60

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300 REPORTABLE QUANTITY(POUNDS): 100 lbs. (Per 40 CFR 302.4) SPILL MITIGATION PROCEDURES:

Hazardous concentrations in air may be found in local spill area and immediately downwind.

AIR RELEASE: Vapors may be suppressed by the use of a water fog. Capture all run off water for treatment and disposal.

WATER RELEASE: This material is soluble in water. Dike or contain material via use of compatible absorbents, Remove material with use of vacuum or pump operation and treat before disposition. This material is harmful to aquatic life.

LAND SPILL: Compatible absorbents: Sand, clay soil, commercial absorbents

SPILL RESIDUES:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.
PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
Response to this material requires the use of self contained breathing apparatus (SCBA).

Additional protective clothing must be worn to prevent personal contact with this material. these items include but are not limited to boots, __loves, hard hat, impervious clothing, i.e. chemically impermeable suit. Compatible materials for response to this material are neoprene, butyl rubber, viton and saranex.

MAY IS FINE

EPORT NUMBER: 703 ISDS NO: 0X622680 FFECTIVE DATE: 04/21/95 VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET PAGE: 007

VERSION: 003

RL_CT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 323776 PROD NO: 503030

XII. WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous liquid waste, it should be disposed of in accordance with local, state and federal regulations by treatment in a wastewater treatment system.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION
TOXIC SUBSTANCES CONTROL ACT: This substance is listed on the Toxic Substances Control Act inventory.

ERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III: None Established HAZARD CATEGORIES, PER 40 CFR 370.2:

HEALTH:

Immediate (Acute) Delayed (Chronic)

PHYSICAL:

Fire

Reactivity

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A: EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45: None Established

XIV. ADDITIONAL INFORMATION
MSDS REVISION STATUS: Transportation information updated

REPORT NUMBER: 703 1909 NO: 0X622680 SEFECTIVE DATE: 04/21/95

H

UAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET PAGE 1 008

VERSION: 003

'RL_JCT: SODIUM HYPOCHLORITE 7-15%

	DRDER NO: 3237 PROD NO : 5030	30
FOR ADDITIONAL INFORMATION		
CONTACT: MSDS COORDINATOR VAN WATERS & ROGERS I DURING BUSINESS HOURS, PACIFIC TIME (206)		
05/12/95 16:42 PRODUCT: 503030 CUST ND: 107510	ORDER NO: 32	23776
NOTICE	***************************************	AN AND MENT MENT MADE SPORT MADE SHEEL
→ VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS AL		## ### ### ### ### ### ### ### ### ###
MPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PAR	TICULAR PURPOS	3E ,
IITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN,	AND SHALL UNI	JER
IN TERMINATIONER RELITARIE FOR INCIDENTAL OR CONSEGUENTIAL	NAMAGES.**	

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE IANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS PELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&RS CONTROL AND THEREFORE USERS THE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO ETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ISSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. 'HIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT ELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER 'ROCESS.

END OF MSDS

13939 N. Rivergate Blvd Portland, Oregon 97203 503-286-1677 • FAX: 289-2272

VENDOR: 00897210

ATTN KEN VAN WATERS & ROGERS, INC. P. O. BOX 3398 PORTLAND, OR 97208-3398

PURCHASE ORDER NO.

Freight Terms

89510146

Date issued 5/01/95 Date Required 5/15/95 Terms PORTLAND/NET 30 Via VENDORS TRUCK

POB: DESTINATION

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
 Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery. is not made as promised.

No.	Quantity	Unit of	nfirmation IZI not a confirmation				
01		Meas.	Description	Store No.	Machine No.	Account No.	Price
	/ 24	PAIL	SODIUM HYPOCHLORITE 12.5%, V.W.R. (PAIL = 5 GAL.) Supplier #: 503030	20-01-010		00-00-0420-0008	13.40
			** ORIGINAL ORDER **				
			(Por Ord + PO323T76 5/15	hs)			
	* 1. - 1.	Para A					
			1	APPNOVAL	ORDER MUST	BE SIGNED TO BE VALID	

Material Safety Data Sheet

May be used to comply with OSHA'S Hazard Communication Standard 29 CFR 2910.1200. Standard must be consulted for specific requirements.

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health (Non-Mandatory Form) Form Approved

OMB No. 1218-0072

Identity (As Used on Label and List) Para Deodorant	Blocks	Note: Blank spaces are not permitted. If any item is not a information is available, the space must be marked t		
Section 1				
Manufacturer For: Triple \$		Emergency Telephone Number (800) 535-5053	(800) 654-4752	
Address (number, Street, City, State, and ZIP Code) 2 Executive Prk Dive	,	Telephone Number for Information (800) 654-4752 (405) 682-2541		
Billerica, MA 01862		Date Prepared 04/24/95		
		Signature of Preparer (optional)	-	
Section II - HMIS Rating				
Health 2 Flaumability	2	Reactivity 0		
Section III - Hazardous Ingredients/Identin	ty Information			
Hazardous Components (Specific Chemical Identity: Co	ommon Name(s)j OSHA F	PEL ACGIH TLV Other Limits % (Recommended	optional)	
Para Dichlorobenzene* [(1,4 Dichlorobenzene), PDCB] CAS #106-4	75 ppi 6-7 8HR 1		5	
UN #1952				
*This product contains Para Dichlorobenzene which is Amendments and Reauthorization Act of 1986 and 40 to		and subject to the reporting requirements of §313 of Title III	of the Superfund	
Section IV - Physical/Chemical Ch	aracteristics			
Hoding Point	345.2 °F/174°C	Specific Gravity (H ₂ O = 1) @ 55 °F / 4 °C	1.245 - 1.250	
Vapor Pressure (mm Hg.) @ 25 °C	0.92	Melting Point	127.4 °F/53 °C	
Vapor Density (AIR = 1)	5.1	Evaporation Rate	N/A	
Solubility in Water: @ 25 °C, % by Wt. 0.008				
Appearance and Odor. White block with penet	rating "mothball" odor.			
Section V - Fire and Explosion Ha	zard Data			
Flash Foint (Method Used) 150 °C (TCC)	Ft	ammable Lunus % by Vol.	LEL UEL 2.5 N/E	
Extinguishing Media Water spray, foam, CO	, dry chemical, or any	Class B extinguishing agent		
Special Fire Fighting Procedures Wear full protection exposure to vap		H/MSHA approved self contained breathing appa	tratus where	
Unusual Fire and Explosion Hazards Highly toxis this produc		oride, Chlorine, and traces of Phosgene) can be ev	colved in fires of	
N/A = Not Applicable			OSHA 174, Sept. 19 P. Ø6	

ara Deodorant Blocks - \$\$	S					
Section VI - R	leactivity Data		,			
Stability	Unsmble		Conditions to Avoid: Keep	away from open fla	une and sparks.	
·	Stuble	х				
Incompatibility (Mate	rials to Avoid): Strong o	xidizers,	oxidizing agents, hot alumin	um or aluminum all	oys	
Hazardous Decompos	ition or Byproducts: Carl	on Mona	xide, Carbon Dioxide, smok	e, soot, Hydrogen (Chloride and Phosgene	
Hazardous Polymerization	May Occur		Conditions to Avoid: None			
	Will Not Occur	х				
Section VII -	Health Hazard Dat	à				
Route(s) of Entry:	Inhalation? Yes	Sk	in? Yes	Ingestion? Ye	s (Unlikely)	
Health Hazards (Acut system. Vapor m			gestion of PSCE at concentrates and has been known to cau	=	ar can cause depression of the n	ervous
Carvinogenicity: NTP? IARC Monographs? OSHA Regulated? PDCB has been listed by the NTP as a substance that is "reasonably anticipated to be" carcinogenic. IARC has been classified as "possibly carcinogenic to humans". It is also listed carcinogen under California Prop. 65.						
Signs and Symptoms concentration abo	•	; dizzines	s; eyes, nose and throat irrite	ition; nausea; feelini	g of drunkenness; cardiac sensi	tization if
Medical Conditions C	Generally Aggravated by Expe	Aute:	Asthma or other respiratory of	disorders; blood, live	er and ladney disorders	
	ter for at least 15 minut	es; if irrita	- :	ntention. Inhalation	lical attention. Skin - flush affe - remove person to fresh air; gi ting; get medical attention.	
Section VIII - Precautions for Safe Handling and Use						
Steps to be Taken in	Case Material is Released or	Spilled:	Scoop up and put in closed of	container.		
Waste Disposal Meth state and federal		burned in	an approved incinerator or o	disposed of in an ap	proved dump in accordance wit	th local,
Other procautions:	Store away from hear	and open	flame. Avoid excessive inh	alation and contact	with skin and eyes.	
Section IX - (Control Measures					
Respiratory Protection	n (Specify Type):					
Ventilation		_	Local Exheust	Well Ventilated	Special N/A	
			Mechanical (General)	N/A	Other N/A	
Protectave Gloves:	None		Eye Protection; Do not	rub eyes with conta	minated hands	
Other Protective Clo	thing or Equipment; Eye t	vash/shov	ver facility nearby			
Work/Hygienic Pract contact with proc	_	oing practi	ices. Avoid skin/eye contact	Wash thoroughly	with soap and water after comi	ng in

N/A = Not Applicable N/D = Not DeterminedNOV-01-1996 11:37

Page 2

14056814219

OSHA 174, Sept. 1985

P.07



Print Date 05/04/95

Print Date 05/04/95

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT NAME OR NUMBER DERMAPLUS SKIN PROTECTANT

HAZARD RATING

Health	0	0 = Least
		l – Slight
Fire	0	2 = Moderate
		3 = High
Reactivity	0	4 - Extreme

MANUFACTURER'S NAME BENCHMARK COMMERCIAL, INC.
COMPANY ADDRESS 466 LAWNDALE DR., #D
SALT LAKE CITY, UTAH 84115
COMPANY PHONE NUMBER (801) 463-3901
EMERGENCY PHONE NUMBER (801) 463-3901
TRADE NAME DERMAPLUS

SECTION 2

PHYSICAL DATA

APPEARANCE.

ODOR.

SPECIFIC GRAVITY @ 25°C.

SOLUBILITY IN WATER.

OIL-IN-WATER EMULSION

VAPOR PRESSURE mm Hg @ 20° C.

NOT DETERMINED

BOILING/MELTING POINT @ 760 mm Hg.

212°F (100° C)

VAPOR DENSITY (AIR = 1).

NOT DETERMINED

EVAPORATION RATE (BUAC = 1).

NOT DETERMINED

PERCENT VOLATILE BY WEIGHT (%).

10.0 (CONTENT OF AEROSOL PROPELLANT)

PH.

7.4

SECTION 3

FIRE EXPLOSION AND REACTIVITY HAZARD DATA

SECTION 4

HEALTH HAZARD INFORMATION

The exact percentages for components of this product constitute a trade secret. Although the below listed chemicals can be considered to be hazardous in their pure concentrated state, in the low concentrations found in the product, they do not pose a serious threat to users. Testing has shown that the product is not a primary dermal or ocular irritant, and is not orally toxic.

SECTION 4

HEALTH HAZARD INFORMATION

Note that possible effects in test animals are reported for continual overexposure to components of this product mixture. Many of the substances having various effects are natural components of common foods and are not known to be harmful in normal use.

CHEMICAL NAME(S)	CAS NUMBER		ACGIH/TLV		OSHA/PEL	
AEROSOL PROPELLANT	75-28-5, 74-	75-28-5, 74-98-6				
	106-97-8		800-1000 ppm		800-1000 ppm	
DIMETHICONE	63148-62-9		NONE		NONE	
STEARIC ACID	<i>57</i> -11-4		NONE		NONE	
COCONUT FATTY ACID	61788-47-4		NONE		NONE	
ISOPROPYL MYRISTATE	110-27-0		NONE		NONE	
GLYCERIN	56-81-5		NONE		NONE	
TRIETHANOLAMINE	102-71-6	NONE		NONE		
POLYVINYLPYRROLIDONE	9003-39-8	NONE		NONE		

SECTION 6

HEALTH HAZARD DATA

ROUTE(S) OF ENTRY:

INHALATION - Not Likely

SKIN - None

<u>INGESTION</u> - Not Likely

HEALTH HAZARDS (ACUTE AND CHRONIC): None Currently Known. When properly applied and allowed to dry, the transfer of DERMAPLUS to anything within its environmental presence is negligible.

CARCINOGENICITY: NPT? - None <u>IARC MONOGRAPH</u>? - None <u>OCHHA REGULATED</u>?- No

SIGNS AND SYMPTOMS OF EXPOSURE: None

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None Known

EMERGENCY AND FIRST AID PROCEDURES: Normally non-irritating. Flush eyes with water for several minutes if contact occurs. Cannot be inhaled unless deliberately attempted. Small amounts could be ingested without undue discomfort. Discontinue use if irritation or discomfort occurs. Seek medical attention if condition persists.

SECTION 7

EFFECTS OF OVEREXPOSURE *** FIRST AID PROCEDURES

Primary Routes of Exposure:

Eye or Skin Contact

Signs and Symptoms of EYES: The compound did not induce irritation or cause sensitization.

Overexposure:

SKIN: The compound was found to be non-irritant to intact and abraded skin. SWALLOWING: Considered non-toxic, however, consult with a physician if

nausea becomes apparent.

Emergency First-Aid

Procedures:

SKIN: None necessary.

EYES: Not considered an ocular irritant. If discomfort occurs rinse with water

several minutes. Get medical attention if necessary.

INGESTION: Considered non-toxic. Contact physician if nansea occurs.

SECTION 8

PRECAUTIONS FOR SAFE HANDLING AND USE

RESPIRATORY PROTECTION...... None required.

PROTECTIVE CLOTHING...... None required. EYE PROTECTION None required.

HANDLING INSTRUCTIONS...... Avoid crushing or piercing. Avoid storing where extreme temperatures.

[130°F (54°C) and above, 32°F (O°C) and below] would exist. Keep out

of reach of small children.

SECTION 9

SPILL OR LEAK PROCEDURES *** WASTE DISPOSAL METHOD

container for transfer to landfill according to local, state and federal

regulations.

SECTION 10

REGULATORY INFORMATION

FEDERAL EPA

Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQ's) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are: *****NONE****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires emergency planning based on Threshold Planning Quantities (TPQ's) and release reporting based on Reportable Quantities (RQ's) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are: ####NONE#####

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III

requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDS's that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are: *****NONE*****

Toxic Substances Control Act (TSCA) STATUS:

The ingredients of this product are on the TSCA inventory.

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute.

SECTION 10

REGULATORY INFORMATION

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present I products.

Components present in this product at a level which could require reporting under the statute are:

*****NONE*****

PENNSYLVANIA Right-To-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

HAZARDOUS SUBSTANCES (⇒ 1%)

*****NONE****

CALIFORNIA SCAOMD RULE 443.1 VOC'S:

Velatiles - substances with a vacou pressure of => 0.5 mmHg at 104 C (219.2F).

This product contains: 93.84 g/liter VOC's

SECTION 11

SHIPPING DATA

D.O.T. PROPER SHIPPING NAME (49 CFR 172.101-102) - Consumer Commodity

HAZARDOUS SUBSTANCE (49 CFR CERCLA List) - Yes REPORTABLE QUANTITY (RQ) - N/A

D.O.T. HAZARD CLASSIFICATION (49 CFR 172.101-102)

PRIMARY - ORM-D None

D.O.T. LABELS REQUIRED (49 CFR 172.101-102) - ORM-D (ground shipments)
ORM-D-AIR (air shipments)

D.O.T. PLACARDS REQUIRED (49 CFR 172.504) - None
POLSON CONSTITUENT (49 CFR 172.203 (K)) - None

BILL OF LADING DESCRIPTION - Consumer Commodity, Cosmetics, IIAZ

SECTION 12

DISCLAIMER

The information in this Material Safety Data Sheet is believed to be reliable, but is provided without warranty regarding its accuracy. Users must determine safe conditions for use and assume liability for any loss, injury, damage or expense resulting from use of this product.

KEY

NA - Not Applicable

NTP -- National Toxicology Program

OSHA — Occupational Safety and Health Administration IARC — International Agency for Research on Cancer ACGIH — American Conference of Industrial Hygienists

VOC - Volatile Organic Carbons



1420 Harbor Bay Parkway Suite 210 Alameda, California 94501 800-548-8381

ERIAL SAFETY DATA SHEE

FLEISCHMANN'S VINEGAR REACTIVITY DATA

Stability

Hazard Polymerization

[X] Stable

[X] Will not occur

1 Unstable

1 May occur

Incompatibility:

Contact with strong oxidizers may cause fires and will react with strong caustics to cause violent spattering and heat.

Hazardous decomposition products:

May produce carbon monoxide (CO) and/or carbon dioxide (CO₂).

SPILL OR LEAK PROCEDURES

If vinegar is spilled, dike to contain, ventilate area, dilute with water: may be neutralized with addition of soda ash.

Do not flush to streams or sewers.

Waste Disposal Methods:

Treatment or disposal of waste generated by use of vinegar should be reviewed in terms of applicable federal, state and local laws and regulations. Users are advised to consult with appropriate regulatory agencies before discharge, treatment or disposal.

SPECIAL PROTECTION INFORMATION

Respiratory Protection:

As required to prevent exposure to concentrations which exceed the permissible level.

Ventilation:

Local exhaust recommended. Mechanical recommended.

Eyes and Face:

Safety glasses or plastic face shield required.

Hands, Arms, Body:

Rubber or neoprene gloves recommended, Rubber apron or other protective equipment as required to reduce direct contact.

Other Equipment:

Eye wash station, safety shower.

PHYSICAL DATA

Appearance and Odor Appropriate color and odor for Vapor Pressure (MM Hg)

% Volatiles by Volume 100%

Specific Gravity 1.01 - 1.04

type of vinegar

11 MM

Boiling Point 215°F @ 100 grain

pН 2.2 @ 100 grain Solubility in Water Complete

Vapor Density (Air=

Elementarina s

Page Culture Preducts

Integrated ingredients

1420 Harbor Bay Parkway Suite 210 Alameda, California 94501 800-548-8381

MATERIAL SAFETY DATA SHEET

FLEISCHMANN'S VINEGAR

Date Issued?

September 3 #1992

Trade Name:

Vinegar, All Varieties

Chemical Name: Chemical Formula: Acetic Acid CH₁COOH

Definition:

Product made by the acetic fermentation of ethyl alcohol and contains 5 to 30% acetic

acid (or 50 to 300 grain vinegar).

Manufacturer's Name and Address:

integrated ingredients 1439 Harbor BayaParkway Suits 210

Phone Number:

HEALTH HAZARD DATA

Inhalation:

Threshold Limit Value:

10 ppm

Short Term Exposure Limit

15 ppm for 15 minutes

Odor Threshold

1.0 ppm

Inhalation of vapors can cause irritation to respiratory tract.

Skin:

Contact may cause mild injury and burns from vinegars of 10% acetic acid and greater. Dilute

solutions may cause dermatitis in some sensitive individuals.

Eyes:

Contact may cause severe burns and permanent corneal injury from concentrated vinegars.

May be followed by blindness. High vapor concentrations may result in conjunctivitis.

Ingestion:

Concentrated vinegars may cause pain, irritation and burns in mouth, esophogus and stomach.

EMERGENCY & FIRST-AID PROCEDURES

In case of eye or skin contact, flush immediately and thoroughly with water.

Saturated clothing should be removed and washed.

If vapors are inhaled extensively, exposed person should be removed to fresh air immediately.

If swallowed, water should be consumed to dilute.

Do not induce vomiting.

Do not give emetics or baking soda.

Call a physician.

FIRE AND EXPLOSION HAZARD DATA

Flash Point:

40°C closed cup

(Acetic Acid)

Auto Ignitition Temperature:

427°C

(Acetic Acid) 4.0% - 16%

Flammable Limits in Air:

(Acetic Acid)

Fire Extinguishing Agents Recommended:

Water spray, foam CO, or dry chemical. Water may be used to dilute spills and reduce

flammability.

Unusual fire and explosion hazards:

Toxic gases and vapors may be released in a fire involving concentrated vinegars.

A Dresson of Burns Prote Food Inc

Fleischmann's Vinca ir Mano Turno a neg Poro Culturo Producta Spund:

ANNUAL CERTIFICATION, REPRESENTATIONS AND DISCLOSURES

SMALL BUSINESS CONCERN REPRESENTATION

- (a) Representation. The Seller represents and certifies that it () is, () is not, a small business concern and that () all, () if not all, end items to be furnished under any order issued by Philip Environmental Inc. (the Buyer) will be manufactured or produced by a small business concern in the United States, its territories or possessions, Puerto Rico, or the Trust Territory of the Pacific Islands.
- (b) Definition. Small business concern, as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria and size standards prescribed by the Small Business Administration (see Code of Federal Regulations, Title 13 Part 12, as amended, which contains detailed industry definitions and related procedures).

SMALL DISADVANTAGED BUSINESS CONCERN

- Asian-Pacific American (US Citizen with origins from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, US Trust Territory of the Pacific Islands Northern Mariana Islands, Laos, Cambodia, Taiwan, Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Republic of the Marshall Islands, or the Federated States of Micronesia).
- Black American (US Citizen)
- Hispanic American (US Citizen with origins from South America, Central America, Mexico, Cuba, the Dominican Republic, Puerto Rico, Spain, Poxtugal)
- Native American (American Indians, Eskimos, Aleuts, or Native Hawaiiars)
- ____ Other
- (c) Certification.
- (1) The Seller represents and certifies that it () is, () is not, a small disadvantaged business concern.
- (2) (Complete only if item (b) above is checked "Other") The Seller represents and certifies that the Small Business Administration (SBA) () has, () has not, made a determination concerning the Seller's status as a small disadvantaged business concern. If the SBA has made such a determination, the date of the determination was ______ and the Seller certifies that it () was, () was not, found by the SBA to be socially and economically disadvantaged as a result of that determination and that no circumstances have changed to vary that determination.
- (d) Notification. The Seller agrees to notify the Buyer before award of any subcontract by Buyer of any change in its status as a small disadvantaged business concern occurring between the date of this certification and contract award.
- (e) Penalty. The Selier represents and certifies that the above information is true and understands that whoever for the purpose of securing a contract, or subcontract under subsection (a) of Section 1207 of Public Law 99-166 misrepresents the status of any concern or person as a small business concern owned and controlled by a minority as described in subsection (a) shall be punished by a fine of not less than \$10,000 or by imprisonment for not more than one (1) year, or both.

8(a) CERTIFIED BUSINESS CONCERI

The Seller represents that it () is, () is not, an 8(a) certified business. The 8(a) Contracting and Business Development Program, started in 1968, it named for the section of the Small Business Act from which it derives its authority. Through the 8(a) program, small companies owned by socially and economically disadvantaged persons can obtain Federal Government contracts and other assistance in developing their businesses. Economically disadvantaged individuals are socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities, as compared to others in the same or similar line of business and competitive market area who are not socially disadvantaged. In determining the degree of economic disadvantage, consideration is given to the following:

- (1) the personal financial condition of the individual(s) claiming disadvantaged status, including the individual's access to capital and credit;
- (2) the financial condition of the business; and
- (3) the applicant's access to capital, credit, and markets. An individual whose personal net worth exceeds \$250,000, excluding his/her ownership interest in the applicant firm and equity in his/her personal residence, will not be considered economically disadvantaged for purposes of program entry.

Every 8(a) certified business participates in the program for nine years from the date an applicant is certified as a program participant. The term is divided into two stages: a four-year developmental stage, and a five-year transitional stage. A variety of program benefits are available during both stages.

WOMEN-OWNED BUSINESS CONCERN

The Seller represents that it () is, () is not, a woman-owned business. A women-owned business is a small business concern that is at least fifty-one percent (51%) owned by women who are United States citizens and who also control and operate the business.

TYPE OF BUSINESS ORGANIZATION

The Seller represents and certifies that (check all applicable boxes or blocks) it operates as () an individual, () a partnership, () a nonprofit organization, () a corporation, incorporated under the laws of the State of _______.

LABOR SURPLUS AREA CLASSIFICATION

The Seller represents that it () is, () is not, located in a labor surplus area as defined by the Secretary of Labor under Executive Order 12073 and 10582.

CERTIFICATION OF NONSEGREGATED FACILITIES

- (a) "Segregated facilities" as used in this provision, means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color religion, or national origin because of habit, local custom or otherwise.
- (b) The Seller certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Seller agrees that a breach of this certification is a violation of the Equal Opportunity clause in the subcontract awarded to Seller by Buyer.
- (c) The Seller further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will:
 - (1) Obtain identical certifications from proposed subcontractors before the award of subcontracts under which the subcontractor will be subject to the Equal Opportunity clause;
 - (2) Retain the certifications in the files; and
 - (3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract under which the subcontractor will be subject to the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

PREVIOUS CONTRACTS AND COMPLIANCE REPORTS

The Seller represents that:

- (a) It () has, () has not, participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation, the clause originally contained in Section 310 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114;
- (b) It () has, () has not, filed all required compliance reports; and
- (c) Representations indicating submission of required compliance reports, signed by proposed contractors, will be obtained before subcontract awards,

EQUAL EMPLOYMENT/AFFIRMATIVE ACTION COMPLIANCE

Supplier () has, () has not, held contracts or subcontracts subject to Executive Order 11246 and 11375.

Supplier () has, () has not, filed required EEO-1 and VETS100 Reports.

The EEO/Affirmative Action program of this firm () has, () has not, been subject to a government compliance review. If so, when?

Supplier () has, () has not, held contracts or subcontracts in aggregate amounts of \$10,000 (), \$50,000 ().

Supplier () has, () has not, developed a written Affirmative Action Program for each of its establishments.

Supplier () will, () will not, develop a written Affirmative Action Program within 120 days after the award of this subcontract.

Supplier () has, () has not, applied to the State Employment Service for a "Certificate of Eligibility" as a minority/women-owned business for Federal procurement contract preference. If so, when?

This firm acknowledges receipt of notice to subcontractors of requirements for certification of nonsegregated facilities and () hereby certifies, () does not certify, that it operates in accordance therein.

Supplier () will, () will not, comply with the provisions for employment of Disabled Veterans and/or Vietnam Era Veterans.

Supplier () will, () will not, comply with the provisions for employment of individuals with handicaps.

Supplier () will, () will not, make provisions for minority/women-owned business enterprises to participate in bidding for performance of contracts.

The Seller represents that (a) it () has developed and has on file, () has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or (b) it () has not, previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS

- (a) (1) The Seller certifies, to the best of its knowledge and belief, that:
 - (i) The Seller and/or any of its Principals:
 - (A) () are, () are not, presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal Agency;
 - (B) () have, () have not, within a 3-year period preceding the date of this certification, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; and
 - (C) () are, () are not, presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a) (1) (B) of this provision.
 - (ii) The Seller () has, () has not, within a 3-year period preceding this certification, had one or more contracts terminated for default by any Federal agency.
 - (iii) The Seller or any of its employees () are not, () are in, violation of the Federal Procurement Integrity Act on Section 1352 of Title 31, United States Code or any other Anti-Kick Back related law, which prohibits activities that may influence Federal employees who are involved in the procurement or administration of Federal contracts.
- (2) "Principals", for the purposes of this certification, means officers, directors, owners, partners, and persons having primary management or supervisory responsibilities within a business entity (e.g., general manager, plant manager, head of a subsidiary, division, or business segment, and similar positions).

This certification concerns a matter within the jurisdiction of an agency of the United States and the making of a false, fictitious, or fraudulent certification that may render the maker subject to prosecution under section 1001, Title 18, United States Code.

- (b) The Seller shall provide immediate written notice to Buyer if, at any time prior to contract award, the Seller learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- (c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award. However, the certification will be considered in connection with a determination of the Seller's responsibility. Failure of the Seller to furnish a certification or provide such additional information as requested by Buyer may render Seller nonresponsible.
- (d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of a Seller is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- (e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance placed when making award. If it is later determined that the Seller knowingly rendered an erroneous certification, in addition to the other remedies available to the Government and Buyer, the Buyer may terminate the contract resulting from this solicitation or default.

Appendix33-001320



NORTH AMERICAN CHEMICAL OPERATIONS

June 26, 1995

WESTERN DIVISION OFFICE

1100 Oakesdale Avenue SW Renton, Washington 98055

Main: 206/227-0311 Fax: 206/204-7164 Toll Free: 800/882-9785

Mailing Address: 955 Powell Avenue SW Renton, WA 98055

To All Philip Environmental Inc. (formerly known as Burlington Environmental Inc.) Vendors & Subcontractors:

SUBJECT: Annual Certification, Representations and Disclosures

Philip Environmental Inc.'s participation in government contracts requires periodic review of our files to assure that we have correctly recorded our suppliers' self-certification of business size, status, Small Disadvantaged Business Enterprise status, compliance with Equal Opportunity requirements and other rules and regulations promulgated by the government. Please check the appropriate boxes listed on all sides of this certificate. If your company is no longer considered a current vendor with our company, a written statement to this effect would be appreciated.

Please have a duly authorized officer of your company sign the certificate on the last page and return within 30 days to:

Philip Environmental Inc. 1100 Oakesdale SW Renton, WA 98055 Attn: Purchasing Department

Sincerely,

G. Jay Bulson Human Resources Manager

١

ANNUAL CERTIFICATION, REPRESENTATIONS AND DISCLOSURES

SMALL BUSINESS CONCERN REPRESENTATION

- (a) Representation. The Seller represents and certifies that it () is, () is not, a small business concern and that () all, () if not all, end items to be furnished under any order issued by Philip Environmental Inc. (the Buyer) will be manufactured or produced by a small business concern in the United States, its territories or possessions, Puerto Rico, or the Trust Territory of the Pacific Islands.
- (b) Definition. Small business concern, as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria and size standards prescribed by the Small Business Administration (see Code of Federal Regulations, Title 13 - Part 12, as amended, which contains detailed industry definitions and related procedures).

SMALL DISADVANTAGED BUSINESS CONCERN

- (a) Definition. "Small disadvantaged business concern", as used in this provision, means a small business concern, including mass media, owned and controlled by individuals who are both socially and economically disadvantaged, as defined in regulations prescribed by the US Small Business Administration at 13 CFR Part 124, the majority of earnings of which directly accrue to such individuals. (13 CFR Part 124 generally provides that a small disadvantaged business concern is a small business concern (1) which is at least fifty-one percent (51%) owned by one or more socially and economically disadvantaged individuals; or in the case of any publicly owned business, at least fifty-one percent (51%) of the voting stock of which is owned by one or more socially and economically disadvantaged individuals, and (2) whose management and daily business operations are controlled by one or more such individuals.) See 13 CFR 124.101 through 124.110).
- (b) Representation. The Seller represents that its qualifying ownership falls within at least one of the following categories (check the applicable categories):
- Subcontinent Asian (Asian-Indian) American (US Citizen with origins from India, Pakistan, Bangladesh or Sri Lanka) Asian-Pacific American (US Citizen with origins from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, US Trust Territory of the Pacific Islands, Northern Mariana Islands, Laos, Cambodia, Taiwan, Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Republic of the Marshall Islands, or the Federated States of Micronesia).
- Black American (US Citizen)
- Hispanic American (US Citizen with origins from South America, Central America, Mexico, Cuba, the Dominican Republic, Puerto Rico, Spain, Portugal)
- Native American (American Indians, Eskimos, Aleuts, or Native Hawaiians) Other
- (c) Certification.
 - (1) The Seller represents and certifies that it () is, () is not, a small disadvantaged business concern.
 - (2) (Complete only if item (b) above is checked "Other") The Seller represents and certifies that the Small Business Administration (SBA) () has, () has not, made a determination concerning the Seller's status as a small disadvantaged business concern. If the SBA has made such a determination, the date of the and the Seller certifies that it () was, () was not, found by the SBA to be socially and economically disadvantaged as a result of that determination and that no circumstances have changed to vary that determination.
- (d) Notification. The Seller agrees to notify the Buyer before award of any subcontract by Buyer of any change in its status as a small disadvantaged business concern occurring between the date of this certification and contract award.
- (e) Penalty. The Seller represents and certifies that the above information is true and understands that whoever for the purpose of securing a contract, or subcontract under subsection (a) of Section 1207 of Public Law 99-166 misrepresents the status of any concern or person as a small business concern owned and controlled by a minority as described in subsection (a) shall be punished by a fine of not less than \$10,000 or by imprisonment for not more than one (1) year, or both.

8(a) CERTIFIED BUSINESS CONCERN

The Seller represents that it () is, () is not, an 8(a) certified business. The 8(a) Contracting and Business Development Program, started in 1968, is named for the section of the Small Business Act from which it derives its authority. Through the 8(a) program, small companies owned by socially and economically disadvantaged persons can obtain Federal Government contracts and other assistance in developing their businesses. Economically disadvantaged individuals are socially disadvantaged individuals whose ability to compete in the free enterprise system has been inipaired bue to difficilished capital and credit opportunities, as compared to others in the same or similar line of business and competitive market area who are not socially disadvantaged. In determining the degree of economic disadvantage, consideration is given to the following:

- (1) the personal financial condition of the individual(s) claiming disadvantaged status, including the individual's access to capital and credit;
- (2) the financial condition of the business; and
- (3) the applicant's access to capital, credit, and markets. An individual whose personal net worth exceeds \$250,000, excluding his/her ownership interest in the applicant firm and equity in his/her personal residence, will not be considered economically disadvantaged for purposes of program entry.

Every 8(a) certified business participates in the program for nine years from the date an applicant is certified as a program participant. The term is divided into two stages: a four-year developmental stage, and a five-year transitional stage. A variety of program benefits are available during both stages.

WOMEN-OWNED BUSINESS CONCERN

The Seller represents that it () is, () is not, a woman-owned business. A women-owned business is a small business concern that is at least fifty-one percent (51%) owned by women who are United States citizens and who also control and operate the business.

TYPE OF BUSINESS ORGANIZATION

The Seller represents and certifies that (check all applicable boxes or blocks) it operates as () an individual, () a partnership, () a nonprofit organization; () a corporation, incorporated under the laws of the State of

LABOR SURPLUS AREA CLASSIFICATION

The Seller represents that it () is, () is not, located in a labor surplus area as defined by the Secretary of Labor under Executive Order 12073 and 10582.

CERTIFICATION OF NONSEGREGATED FACILITIES

- (a) "Segregated facilities" as used in this provision, means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color religion, or national origin because of habit, local custom or otherwise.
- (b) The Seller certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Seller agrees that a breach of this certification is a violation of the Equal Opportunity clause in the subcontract awarded to Seller by Buyer.
- (c) The Seller further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will:
 - (1) Obtain identical certifications from proposed subcontractors before the award of subcontracts under which the subcontractor will be subject to the Equal Opportunity clause;
 - (2) Retain the certifications in the files; and
 - (3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATION OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract under which the subcontractor will be subject to the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

PREVIOUS CONTRACTS AND COMPLIANCE REPORTS

The Seller represents that:

(a) It () has, () has not, participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation, the clause originally contained in Section 310 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114;

The second of the second of

- (b) It () has, () has not, filed all required compliance reports; and
- (c) Representations indicating submission of required compliance reports, signed by proposed contractors, will be obtained before subcontract awards.

EQUAL EMPLOYMENT/AFFIRMATIVE ACTION COMPLIANCE

Supplier () has, () has not, held contracts or subcontracts subject to Executive Order 11246 and 11375.

Supplier () has, () has not, filed required EEO-1 and VETS100 Reports.

The EEO/Affirmative Action program of this firm () has, () has not, been subject to a government compliance review. If so, when?

Supplier () has, () has not, held contracts or subcontracts in aggregate amounts of \$10,000 (), \$50,000 (),

.

Supplier () has, () has not, developed a written Affirmative Action Program for each of its establishments.

Supplier () will, () will not, develop a written Affirmative Action Program within 120 days after the award of this subcontract.

Supplier () has, () has not, applied to the State Employment Service for a "Certificate of Eligibility" as a minority/women-owned business for Federal procurement contract preference. If so, when?

This firm acknowledges receipt of notice to subcontractors of requirements for certification of nonsegregated facilities and () hereby certifies, () does not certify, that it operates in accordance therein.

Supplier () will, () will not, comply with the provisions for employment of Disabled Veterans and/or Vietnam Era Veterans.

Supplier () will, () will not, comply with the provisions for employment of individuals with handicaps,

Supplier () will, () will not, make provisions for minority/women-owned business enterprises to participate in bidding for performance of contracts.

The Seller represents that (a) it () has developed and has on file, () has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or (b) it () has not, previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS

- (a) (1) The Seller certifies, to the best of its knowledge and belief, that:
 - (i) The Seller and/or any of its Principals:
 - (A) () are, () are not, presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal Agency;
 - . (B) () have, () have not, within a 3-year period preceding the date of this certification, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property; and
 - (C) () are, () are not, presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a) (1) (B) of this provision.
 - (ii) The Seller () has, () has not, within a 3-year period preceding this certification, had one or more contracts terminated for default by any Federal agency.
 - (iii) The Seller or any of its employees () are not, () are in, violation of the Federal Procurement Integrity Act on Section 1352 of Title 31, United States Code or any other Anti-Kick Back related law, which prohibits activities that may influence Federal employees who are involved in the procurement or administration of Federal contracts.
 - (2) "Principals", for the purposes of this certification, means officers, directors, owners, partners, and persons having primary management or supervisory responsibilities within a business entity (e.g., general manager, plant manager, head of a subsidiary, division, or business segment, and similar positions).

This certification concerns a matter within the jurisdiction of an agency of the United States and the making of a false, fictitious, or fraudulent certification that may render the maker subject to prosecution under section 1001, Title 18, United States Code.

- (b) The Seller shall provide immediate written notice to Buyer if, at any time prior to contract award, the Seller learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- (c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award. However, the certification will be considered in connection with a determination of the Seller's responsibility. Failure of the Seller to furnish a certification or provide such additional information as requested by Buyer may render Seller nonresponsible.
- (d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of a Seller is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- (e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance placed when making award. If it is later determined that the Seller knowingly rendered an erroneous certification, in addition to the other remedies available to the Government and Buyer, the Buyer may terminate the contract resulting from this solicitation or default.

CERTIFICATION OF DIRCLOSIN	RE OF OWNERSHIP OR CONTROL B	WAROBRICH COURDANCENT TH	AT DEPOS TO THE PROPERTY OF A PARTY OF THE P
CERTIFICATION OR DISCLOSUR	CE OF OWNERSHIP OR CONTROL B	IY A FOREIGN GOVERNMENT TH	A I SUPPUR IS TERRURISM

- (a) "Significant interest" as used in this provision means:
 - (1) Ownership of or beneficial interest in five percent (5%) or more of the firm's or subsidiary's securities. Beneficial interest includes holding five percent (5%) or more of any class of the firm's securities in "nominee shares", "street named", or some other method of holding securities that does not disclose the heneficial owner.
 - (2) Holding a management position in the firm such as director or officer;
 - (3) Ability to control or influence the election, appointment, or tenure of directors or officers of the firm;
 - (4) Ownership of ten percent (10%) or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm, or

(5) Holding fifty percent (50%) or more of the indebtedness of a firm.

- (b) Unless paragraph (c) below has been completed, the Seller certifies, to the best of its knowledge and belief, that no government of a foreign country, or agent or instrumentality of a foreign country, listed below, has directly or indirectly, a significant interest in the Seller or, if the Seller is a subsidiary, in the firm that owns or controls, directly or indirectly, Seller. Such countries currently include:
 (1) Cuba; (2) Iran; (3) Libya; (4) Syria; and (5) South Yemen
- (c) If Seller is unable to certify in accordance with (b) above, the Seller represents that the following country or countries (listed in (b) above) or an agent or instrumentality of such country or countries, have a significant interest in the Seller's firm:

(i non i minor)	·	
(Phone Number)		
(Title of Contact Person)	·	
Continue a second		
(Contact Person)	· ·	And the Commission of the Comm
(Company Name)		AUG 01 199 BY:
		RECEIV

(Title of Authorized Signer)

CERTIFICATION OR DISCLOSURE OF OWNERSHIP OR CONTROL BY A FOREIGN GOVERNMENT THAT SUPPORTS TERRORISM

- (a) "Significant interest" as used in this provision means:
- (1) Ownership of or beneficial interest in five percent (5%) or more of the firm's or subsidiary's securities. Beneficial interest includes holding five percent (5%) or more of any class of the firm's securities in "nominee shares", "street named", or some other method of holding securities that does not disclose the beneficial owner.
- (2) Holding a management position in the firm such as director or officer;
- (3) Ability to control or influence the election, appointment, or tenure of directors or officers of the firm;
- (4) Ownership of ten percent (10%) or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm, or
- (5) Holding fifty percent (50%) or more of the indebtedness of a firm.
- (b) Unless paragraph (c) below has been completed, the Seller certifies, to the best of its knowledge and belief, that no government of a foreign country, or agent or instrumentality of a foreign country, listed below, has directly or indirectly, a significant interest in the Seller or, if the Seller is a subsidiary, in the firm that owns or controls, directly or indirectly, Seller. Such countries currently include:
 - (1) Cuba; (2) Iran; (3) Libya; (4) Syria; and (5) South Yemen
- (c) If Seller is unable to certify in accordance with (b) above, the Seller represents that the following country or countries (listed in (b) above) or an agent or instrumentality of such country or countries, have a significant interest in the Seller's firm:

Significant Interest:	•	
Significant interest:		
		RECEIVE
		RECEIVE
		AUG 01 1995 BY:
(Company Name)	·	T-15 Z
		BY:
(Contact Person)		
(Title of Contact Person)		
(Title of Collact Fason)	•	
(Phone Number)	 	
I hereby certify that the above inf	ormation is true, correct and complete.	
_		
	(Signature of Authorized Signer)	(Date)
	(Title of Authorized Signer)	



CHEMICAL OPERATIONS

WESTERN DIVISION OFFICE

1100 Oakesdale Avenue SW Renton, Washington 98055 Main: 206/227-0311

Fax: 206/204-7164 Toll Free: 800/882-9785

Mailing Address: 955 Powell Avenue SW Renton, WA 98055

June 26, 1995

To All Philip Environmental Inc. (formerly known as Burlington Environmental Inc.) Vendors & Subcontractors:

SUBJECT: Annual Certification, Representations and Disclosures

Philip Environmental Inc.'s participation in government contracts requires periodic review of our files to assure that we have correctly recorded our suppliers' self-certification of business size, status, Small Disadvantaged Business Enterprise status, compliance with Equal Opportunity requirements and other rules and regulations promulgated by the government. Please check the appropriate boxes listed on all sides of this certificate. If your company is no longer considered a current vendor with our company, a written statement to this effect would be appreciated.

Please have a duly authorized officer of your company sign the certificate on the last page and return within 30 days to:

Philip Environmental Inc. 1100 Oakesdale SW Renton, WA 98055 Arm: Purchasing Department

Sincerely,

G. Jay Bulson Human Resources Manager

Appendix33-001325



MATERIAL SAFETY DATA SHEET

Complies with OSHA Hazard Communication Standard 29 CFR 1910, 1200

Date of Preparation: 7/1/95

HEALTH - 1

FLAMMABILITY - 1 REACTIVITY - 1 OTHER - NONE

SECTION 1 - MATERIAL IDENTIFICATION

PRODUCT NAME: POLYBAC #500 HI TEMPERATURE RED

PRODUCT APPEARANCE:

Paste like, red, Acidic Acid Odor

CHEMICAL NAME: ACETOXYSILANE

DOT HAZARD CLASSIFICATION: NONE

EMERGENCY TELEPHONE NUMBERS:

1-800-535-5053

INFOTRAC

1-708-231-5600 -

POLYGEM, INC.

SECTION 2 - HAZARDOUS INGREDIENTS

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT Acetoxysilane

CAS# T/S

PEL/TLV-TWA

STEL-TWA

N/E

N/E

N/E - Not Established

T/S - Trade Secret

S Skin

ned in 40 CPR 172 and 25 CPF 1010 which are present in this product and all gundoneries which appear on the hazardous substance just of any state Listed above are the hazardous componential as defi

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

The following data represents approximate or typical values. They do not constitute product specifications.

BOILING RANGE: >300 F

MELTING POINT: N/A

DENSITY: 1.05

PERCENT VOLATILE: LESS THAN 5%

VAPOR DENSITY (AIR=1): NOT VOLATILE

VAPOR PRESSURE (mm Hg): LESS THAN 5MM

EVAPORATION RATE: LESS THAN 1%

WATER MISCIBILITY: LESS THAN .01%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: >250 F

TEST METHOD: SETAFLASH CLOSED CUP

LOWER FLAMMABILITY LIMIT:

N/A

UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA:

FOAM, CARBON DIOXIDE.

SPECIAL FIRE FIGHTING PROCEDURES:

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF CONTAINED BREATHING

APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS. REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

MAY PRODUCE HAZARDOUS FUMES OR HAZARDOUS DECOMPOSITION PRODUCTS.

SECTION 5 - REACTIVITY DATA

STABILITY: STABLE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

INCOMPATABILITY: Strong oxidizers, epoxy resin, and amine mixtures especially when hot. HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide, Carbon Dioxide and Phenolics.

CONDITIONS TO AVOID: High heat, amines, strong oxidizers acids and bases.

SECTION 6 - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE.

INHAL ATION May cause irriation to upper respiratory tract. Avoid prolonged or repeated inhalation

EYE CONTACT: May cause eye irritation on protonged or repeated exposure.

SKIN CONTACT: May cause skin imitation on prolonged or repeated exposure

MGESTION Dip not take internally. May cause burns of mouth and threat.

CHRONIC EFFECTS OF OVEREXPOSURE Possible allergic skin reaction.

EMERGENCY & FIRST AID PROCEDURES

EYES. Flush with planty of water and get medical abenuon. Keep eye lids apain. Wash within 1 minute of contact for maximum results.

Skills. Promptly wipe clean with paper or cloths and wash with soap and water. Remove contain nated clothing before reuse

Attention should be paid to hair, nose and eyes.

INHAL ATION. In case of exposure to high concentration of vapor or mist, remove person to fiesh air.

INGEISTION If large amounts are swallowed, induce vomiting. Seek medical attention. May dauge burns to mount and threat

PRIMARY ROUTES OF ENTRY Inhalation Ingestion. Skin and Eye contact.

CARCINOGENITY. This product does not contain 0.1% or more of any substance which is listed as a cardinogen by NTP, IARC or OSHA.

SECTION 7 - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED.

vientilate area. Absorb spill with suitable absorbent material and place into a closed container

Prevent material from entering waterways. Wear protective equipment during cleanup, lusaleye and skin protection

WASTE DISPOSAL METHOD

Incinerate of use biological treatment in accordance with federal, state and local regulations

For further information, contact: EPA - FCRA HOTLINE (1-800-424-9346)

SECTION 8 - SPECIAL PROTECTION INFORMATION

RESPIRATIONY PROTECTION

Should be worn to evoid breatning spray mist, neated vapors or if Ti,V is exceeded. Acid vapor type,

VENTILATION

Local exhaust and general ventilation recommended

PROTECTIVE GLOVES

impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION

Chemical splash coadles

OTHER PROTECTIVE EQUIPMENT

As required to prevent wetting of skir, and clothing

SECTION 9 - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

This material may cause sensitization. Do not get in eyes, or skin or clothing. Oc not allow crothing to contact skin. Avoid contact with vapors or furnes.

SPECIAL PRECAUTIONS

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light

Store at temperatures below 120 F. Remove all contaminated clothing, shoes, belts, and other leather goods immediately.

Solvents should not be used to clean san because of increased penetration potential. Wash contaminated clothing before reuse

SECTION 10 - SUPPLEMENTAL INFORMATION

BEGULATORY INFORMATION INVA

SARA HAZARO CLASSIFICATION, SARA Title III Recitations (40 CFR 370), N/A

SAPA SECTION 313 LISTED INGREDIENTS

This material does not contain any substance which is subject to the reporting regularments of 40 CFR 370

DOT PROPER SHIPPING NAME

SILICONE

UNINUMBER, N/A

top information in turnished without wearants, representation inducement or foreign and hind, a contributive entry to the best of Polygen. Inc. Informeting, or obtained from solutions believed by Polygen. Inc. to be eccurate, and however, inc., open in A and a solution interpretation of the service contribution of the service contributi

Tarr, Inc

2429 N Barthwick PO Bax 12570 Partland, Oregon 97212-0570 Phone 503-288-5294 800-422-5069 Fax 503-288-0421

July 21, 1995



ASHGROVE CEMENT CO 13939 N RIVERGATE PORTLAND, OR 972036608

IN ACCORDANCE WITH THE HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FROM THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), WE ARE ENCLOSING A MATERIAL SAFETY DATA SHEET (MSDS) FOR THE FOLLOWING:

PRODUCT CODE

ATF

Arizone 4115 W Turney Avenue Phoenix, Arizona 85019 Phone 602-233-2000 800-350-2436 Fax 602-233-9190

Seattle 4510 8 Street NW Auburn, Washington 98001 Phone 206-859-2979 Fax 206-859-3020

7208 NE St Johns Road Vancouver, Washington 98665 Phone 206-694-2521, From Portland 503-239-1566 Fax 206-737-8537

Vancouver

THE MSDS'S SHOULD BE UTILIZED FOR THE EDUCATION AND TRAINING OF YOUR EMPLOYEES AS TO THE PROPERTIES, HAZARDS, AND PROTECTION REQUIREMENTS RELATED TO THE PRODUCTS WHICH YOU PURCHASE FROM TARR, INCORPORATED.

SINCERELY,

Mike Rooney

ENVIRONMENTAL AND SAFETY COORDINATOR





Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON Automatic Transmission Fluid

PRODUCT NUMBER(S): CPS226502 CPS238111 SYNONYM: DEXRON - III MERCON

COMPANY IDENTIFICATION

EMERGENCY TELEPHONE NUMBERS

Chevron USA Products Company Environmental, Safety, and Health Room 2900 575 Market St. San Francisco, CA 94105-2856 HEALTH (24 hr): (800)231-0623 or (510)231-0623 (International) TRANSPORTATION (24 hr): CHEMTREC (800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500

Environmental, Safety, & Health Info: (415) 894-1899

Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON Automatic Transmission Fluid

CONTAINING

COMPONENTS AMOUNT LIMIT/QTY AGENCY/TYPE

LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING

HYDROTREATED DIST., HVY PARA

Chemical Name: DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CAS64742547

5 mg/m3 (mist) ACGIH TWA 10 mg/m3 (mist) ACGIH STEL 5 mg/m3 (mist) OSHA PEL

SOLVENT DEWAXED DIST., HVY PAR

Revision Number: 22 Revision Date: 05/05/95 MSDS Number: 000021 MDA - No Data Available MA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (2400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-005061 (06-89)

Chemical Name: DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

CAS64742650 5 mg/m3 (mist)

5 mg/m3 (mist) ACGIH TWA 10 mg/m3 (mist) ACGIH STEL 5 mg/m3 (mist) OSHA PEL

SOLVENT REF. DIST. LT NAPHTHEN

Chemical Name: DISTILLATES, SOLVENT-REFINED LIGHT NAPHTHENIC

CAS64741975 5 mg/m3 (mist) ACGIH TWA

5 mg/m3 (mist) OSHA PEL

DISTILLATES, HYDROTREATED

Chemical Name: DISTILLATES, (PETROLEUM), HYDROTREATED LIGHT PARAFFINIC

CAS64742558

5 mg/m3 (mist) ACGIH TWA

10 mg/m3 (mist) ACGIH STEL

5 mg/m3 (mist)

OSHA PEL

DISTILLATES, SOLVENT-DEWAXED

Chemical Name: DISTILLATES, (PETROLEUM), SOLVENT-DEWAXED LIGHT PARAFFINIC

CAS64742569

5 mg/m3 (mist) ACGIH TWA 10 mg/m3 (mist) ACGIH STEL

5 mg/m3 (mist) OSHA PEL

ADDITIVES

< 15.0%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the λ CGIH definition for mineral oil mist. The λ CGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

TLV - Threshold Limit Value TWA

TWA - Time Weighted Average

STEL - Short-term Exposure Limit

TPQ - Threshold Planning Quantity

Q - Reportable Quantity

PEL - Permissible Exposure Limit

C - Ceiling Limit

CAS - Chemical Abstract Service Number

Al-5 - Appendix A Categories

() - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH RFFECTS

EYE:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

Revision Number: 22 Revision Date: 05/05/95 MSDS Number: 000021

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

4. FIRST AID MEASURES

RYE:

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: COC 349F (176C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA EXTINGUISHING MEDIA:

CO2, Dry Chemical, Alcohol Foam and Water Fog.

NFPA RATINGS: Health 1; Planmability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

CONBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and boron. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616 ACCIDENTAL RELEASE MEASURES:

Revision Number: 22 Revision Date: 05/05/95 MSDS Number: 000021

Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Exposure Controls/Personal Protection. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

8. REPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Red liquid.

NDA

VAPOR PRESSURE:

NA

VAPOR DENSITY

(AIR=1): NA

BOILING POINT: NDA

FREEZING POINT: NDA MELTING POINT:

SOLUBILITY:

Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.89 @ 15.6/15.6C

EVAPORATION RATE: NA

VISCOSITY:

6.8 cst @ 100C (Min.)

Revision Number: 22 Revision Date: 05/05/95 NSDS Number: 000021 NDA - No Data Available NA - Not Applicable

PERCENT VOLATILE

(VOL):

NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

MDA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HATARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SUBCHRONIC EFFECTS:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrocracking. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

Revision Number: 22 Revision Date: 05/05/95 MSDS Number: 000021

This material is not expected to present any environmental problems other than those associated with oil spills.

13. DISPOSAL CONSIDERATIONS

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

pure off curporing: I' fiffiedities (Vents) thatter pitects:	SARA	311 CATEGORIES:	1.	Immediate	(Acute)	Health Effects:	NO
--------------------------------------------------------------	------	-----------------	----	-----------	---------	-----------------	----

2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard:

4. Sudden Release of Pressure Hazard: NO

5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

01-SARA 313	11-NJ RTK	22-TSCA Sect 5(a)(2)
02=MASS RTK	12-CERCLA 302.4	23=TBCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07-IARC Group 2A	17=OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19-Chevron TWA	30=Chevron STEL
10=PA RTK	20*EPA Carcinggen	

The following components of this material are found on the regulatory lists indicated.

DISTILLATES, SOLVENT-REFINED LIGHT NAPHTHENIC

Revision Number: 22 Revision Date: 05/05/95 MSDS Number: 000021

is found on lists: 02,14,17,

DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

is found on lists: 14,15,17,

DISTILLATES, (PETROLEUM), HYDROTREATED LIGHT PARAFFINIC

is found on lists: 02,14,15,17,

DISTILLATES, (PETROLEUM), SOLVENT-DEWAXED LIGHT PARAFFINIC

is found on lists: 02,14,15,17,

DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

This revision updates Section 1 (Chemical Product and Company ID.).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Ravision Number: 22 Revision Date: 05/05/95 MSDS Number: 000021

Tarr, Inc

2429 N Borthwick PG Box 12570 Portland, Oregon 97212-0570 Phone 503-288-5294 800-422-5069 Fax 503-268-0421

July 31, 1995



ASHGROVE CEMENT CO 13939 N RIVERGATE PORTLAND, OR 972036608

IN ACCORDANCE WITH THE HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FROM THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), WE ARE ENCLOSING A MATERIAL SAFETY DATA SHEET (MSDS) FOR THE FOLLOWING:

PRODUCT CODE

D40030

Arizona

4)15 W Turney Avenue Phoenix, Arizona 95019 Phone 602-233-2000 800-350-2436

Fax 602-233-9190

Seattle

4510 B Street NW Auburn, Washington 98001 Phone 206-859-2979 Fax 206-859-3020

Vancouver

Vancouver, Washington 98665 Phone 206-694-2521 From Portland 503-239-1566

7208 NE St Johns Road

Fax 206-737-8537

THE MSDS'S SHOULD BE UTILIZED FOR THE EDUCATION AND TRAINING OF YOUR EMPLOYEES AS TO THE PROPERTIES, HAZARDS, AND PROTECTION

REQUIREMENTS RELATED TO THE PRODUCTS WHICH YOU PURCHASE FROM

TARR, INCORPORATED.

SINCERELY,

Mike Rooney

ENVIRONMENTAL AND SAFETY COORDINATOR





Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON DELO 400 SAE 30

PRODUCT NUMBER(S): CPS235118 CPS238052

COMPANY IDENTIFICATION

EMERGENCY TELEPHONE NUMBERS

Chevron USA Products Company Environmental, Safety, and Health Room 2900 575 Market St. San Francisco, CA 94105-2856 HEALTH (24 hr): (800)231-0623 or (510)231-0623 (International) TRANSPORTATION (24 hr): CHEMTREC (800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500

Environmental, Safety, & Health Info: (415) 894-1899

Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON DELO 400 SAE 30

CONTAINING

CUMPONENTS	ANOUNT	PIMIT/OTI	AGENCY/TYPE
LUBRICATING BASE OIL			
SEVERELY REFINED PETRO	LEUM DISTILLATE		
	> 80.0%	5 mg/m3 (mist)	ACGIH TWA
		10 mg/m3 (mist)	ACGIH STEL
		5 mo/m3 (mist)	OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741884, CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

ADDITIVES INCLUDING THE FOLLOWING < 20.0%

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599
NDA - No Data Available NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (2400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-DDS051 (06-89)

ZINC ALKYL DITHIOPHOSPHATE

Chemical Name: PHOSPHORODITHIOIC ACID, 0, 0-DI-C1-14-ALKYL ESTERS, ZINC SALT CAS68649423 < 1.6%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity PEL - Permissible Exposure Limit

C - Ceiling Limit CAS - Chemical Abstract Service Number

Al-5 - Appendix A Categories () - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

EVE:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INKALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. Prolonged or repeated breathing of petroleum oil mist can cause respiratory irritation. This hazard evaluation is based on data from similar materials.

SIGNS AND SYMPTOMS OF EXPOSURE:

INHALATION: Respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing.

4. FIRST AID MEASURES

EYE:

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599 MDA - No Data Available NA - Not Applicable No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INCESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

5. PIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: (COC) 419F (210C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lower: NA Upper: NA

EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and boron. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616 ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force. DO NOT weld, heat or drill container. Residue may

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599
MDA - No Data Available NA - Not Applicable

X-DOS021 (01-89)

ignite with explosive violence if heated sufficiently.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

ENGINEERING CONTROLS:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Dark brown liquid.

NDA

VAPOR PRESSURE:

NA

VAPOR DENSITY

(AIR=1):

NA

BOILING POINT:

NA

FREEZING POINT:

NDA

MELTING POINT:

NA

SOLUBILITY:

Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.88 @ 15.6/15.6C

EVAPORATION RATE: NA

VISCOSITY:

11.6 cSt @ 100C (Min.)

PERCENT VOLATILE

(VOL):

NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

NDA - No Data Available

May react with strong oxidizing agents, such as chlorates, nitrates,

Revision Date: 09/28/94 MSDS Number: 005599 Revision Number: 3 NA - Not Applicable

X-DOS021 (01-99)

peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

RYE RFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrocracking. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. BCOLOGICAL INFORMATION

BCOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present any environmental problems other than those associated with oil spills.

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Oil collection services and collection centers are available for used motor oil recycling or disposal. Some service stations, automotive service centers, and retailers provide motor oil collection facilities.

Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311	CATEGORIES:	1.	Immediate	(Acute)	Health	Effects:	NO
----------	-------------	----	-----------	---------	--------	----------	----

2. Delayed (Chronic) Health Effects: NO

3. Fire Hazard:

4. Sudden Release of Pressure Hazard: NO

5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

01=SARA 313	11=NJ RTK	22=TSCA Sect 5(a)(2)
02=MASS RTK	12=CERCLA 302.4	23=TSCA Sect 6
03=NTP Carcinogen	13=MN RTK	24=TSCA Sect 12(b)
04=CA Prop 65-Carcin	14=ACGIH TWA	25=TSCA Sect 8(a)
05=CA Prop 65-Repro Tox	15=ACGIH STEL	26=TSCA Sect 8(d)
06=IARC Group 1	16=ACGIH Calc TLV	27=TSCA Sect 4(a)
07=IARC Group 2A	17-OSHA PEL	28=Canadian WHMIS
08=IARC Group 2B	18=DOT Marine Pollutant	29=OSHA CEILING
09=SARA 302/304	19=Chevron TWA	30=Chevron STEL
10=PA RTK	20=EPA Carcinogen	

The following components of this material are found on the regulatory

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599

lists indicated.

PHOSPHORODITHIOIC ACID, O, O-DI-C1-14-ALKYL ESTERS, ZINC SALTS

is found on lists: 01,11,

SEVERELY REFINED PETROLEUM DISTILLATE

is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

This revision updates Section 3 (Hazards ID.), Section 4 (First Aid Measures), Section 8 (Exposure Controls/Personal Protection) and Section 15 (Regulatory Information).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599

NDA - No Data Available NA - Not Applicable



CALGAZ

Air Liquide America Corp. Cambridge Plant 821 Chesapeake Drive Cambridge, Maryland 21613 USA Tel: (410) 228-6400 ext 103

(800) 638-1197 ext 103

Fax: (410) 228-4251

Property of Air Liquide America Corporation. The information contained in this facsimile message is intended only for the use of the individual or entity named below and may be confidential. If the reader of this message is not the intended recipient, you are hereby notified that any unauthorized dissemination, distribution or copy of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone. THANK YOU

From: Vicki Lewis, Customer Service Representative Please deliver the following message of 3 pages to:

Name:	Horoard & Madreson
Firm:	DSh Gwie CEmento.
Fax Number:	503-289-2273-
Date:	7-31-95

Regarding our earlier telephone conversation you will find our 'Material Safety Data Sheet" for the following gases:

Zero air

Thank you for your continued interest in the "Calgaz" product line.

Have a G ♥ D day!!!

Appendix33-001344

			Paga 2	
AZAROGIS MILIT	PERS OF OTHER LIGHT	E SOLIDA, OR CASES		
			,	
			A/A {	
				f
		PHYSICA	AL DAYA	
-317.9°F	(-104 APC)		54.70 16/ft ³ (876.21 kg/m ³)	
APPRICATION	70°F (21.1°	() above the	Q16 1610F7 47 76 7 1 day	
critical to	moerature of	-220.4°F (-140.2°C)	.0749 1b/ft ³ (1.200 kg/m ³) Auguston Fear R/A; Hubble Point 2 1 Aim, = -317.8°F (-194.35°C)	
-	CHOR	Considir assurance	970°F (Air = 1.0) fs 1.0.	
<u> </u>	000/1633 Qas,		ON HAZARO DATA	
LASP PORT ME	HOD LINES	AUTO CANTON TRAFFILATION		
R/A	·	N/A	N/A	
			ALECTRICAL CLASSPICATION	
MOST LANGS	le gas		Nonhazardous	
Compressed	air at high p		erate the burning of materials to a greater	,
race cross	they burn at a			ţ
ET ARRASTY		REACTIVE	ITY DATA	
enterior Charles		Consumer to water		
\$7444	x			
10 may 17				
None	MOSTON PRODUCTS			
NORE			Ì	
MATAGOLO POLY May Down	MENTATION	COMPTRONS TO AVEN		
	<u> </u>	 		
	<u>_</u>	<u> </u>		
		SPILL OR LEAK	PROCEDURES	
STEPS TO BE TAKE	O CAME HATERAL H	MILLIAND ON MILLER		
			5/A	
			ļ	

EMERGENCY RESPONSE DIFORMATION IN CASE OF EMERGENCY INVOLVING THIS MATERIAL, CALL DAY OR NIGHT (200) 231-1366 OR CALL CHEMTREC AT (800) 424-9300

N/A

SPECIAL	PROTECTION	UNFORMATION
---------	------------	-------------

	-		•
_		_	7
	_	_	

SERVICE TORY PROTECTION GLOODY I				
N/A				
M/Y ASSESTABLE	FOCUS BORNIST	N/A	SPECIAL.	
ry n	MECHANICAL (Gen.)		GTHER	
		N/A	<u> </u>	
PAGING NATES				
Any material				
FIEL PROTECTION				
Safety goggles or gla	15565			
OTHER PROTECTIVE ECHAPADOT				
Safaty shoes				

SPECIAL PRECAUTIONS.

THE PARTY IS NOT THE PARTY OF T DOT Hazard Class: Nonflammable gas Air, compressed DOT Shipping Name: I.D. No.: UN 1002 DOT Shipping Label: Nonflammable gas

Yalve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<3,000 psig) piping or systems. Do not kent cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handing recommendations conquit L'Air Liquide's Encyclopatio de Gaz de Cocaremad Gas Association Pampt let P-1,

Protect cylinders from physical damage. Store in cool, dry, well-wentilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 1305 (540). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional storage recommendations greated L'Air Liquide's Encyclopedia de Gaz or Compressed Gas Associators Pamphiet P-4,

Dry air is noncorrosive and may be used with all materials of construction. Moisture causes metal oxides which are formed with mir to be hydrated so that they increase in volume and lose their protective role (rust formation). Concentrations of SO2, Cig. salt, etc. in the moisture enhances the rusting of metals in air.

PROPERTY OF PRESENTATIONS

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

ers according to a Department of Transportation, Comparisonal Salety and Health Add

600 700 Ph

ARRESTORAL P	M.

TRADE NAME AND SYNONYMS: (0	Continued)
Air; Compressed Air; Compres	ssed Air, Breathing Quality
	•
·.	•
MOTE: Atmospheric air which of gases:	is compressed is composed of the following concentrations
<u>Gas</u>	Molar I
Hitrogen	78.09
Oxygen	20.94
Argon	0.93
Carbon Dioxide	0.033*
Meon	18.18 x 10 ⁻⁴
Helium.	5.239 x 10 ⁻⁴
Krypton	1.139 x 10 ⁻⁴
Hydrogen	0.5 x 10 ⁻⁴
Xenon	0.086 x 10 ⁻⁶
Radon	6 × 10 ⁻¹⁸
Water vapor	Yarying concentrations
* forcentrations may have al	ight usefations

Compressed air is also produced by reconstitution using only oxygen and mitrogen. This product contains 79 molar percent nitrogen and 21 molar percent oxygen plus trace amounts of other atmospheric gases which are present in the oxygen and nitrogen.



Material Safety Data Sheet

	Coopressed Air	1
	TELEPHINE (615) 977-4809 ENERGENCY RESPONSE RECOMMENDS ON MARC 2	
Liberto Adi COMPEnsalede estalena, 3-05 preser Ome California Plaza, Suito 350 2121 M. California Braz Walent Croop, California 94500	Trade have and privation See last page. Chemical made and privative Atir	the squares N/A
SING DATE OCTOBER 1, THE MR REMOVES CONFIDENCE SAFETY DEPT.		OFFICAL FAMILY
	41044 Ch4 1447 ha h 484	

	HEA	LTH HAZARI	DATA		
THE WINDSHIPS AVENUE STREET	TE JUNET				
Nome listed (ACGIH,)	1984-85).			•	
STATIONS OF EMPOURE					
Air is aontoxic and a environment such as a symptoms similar to a toes, abmormal sensal sickness paims or "be	onderwater diving, werexposure to pu tions, impaired co	, caissons ere oxygen. pordination	or hyperbaric These inclu- and confusion	chambers (de tingling n. Decomp	can result in of fingers and
THROUGHCAL PROPERTY					 -
High pressure effects mervous system. Impo blood.					
Listed as Carcinogen or Potential Carcinogen	National Tericology Program	Yes 🖸 No 🖾	I.A.R.C. Monographs	Yes □ No 図	OSHA Yes D No E
RECOMMENDED WHEN AND THEATER	Bet -				
Facilities or practic should be prepared to Caisson Disease). De	deal with illnes	ses associ	ated with deci		

Tarr, Inc

2429 N Borthwick PO Box 12570 Portland, Oregon 97212-0570 Phone 503-288-5294 800-422-5069 Fax 503-288-0421

July 31, 1995



ASHGROVE CEMENT CO 13939 N RIVERGATE PORTLAND, OR 972036608

IN ACCORDANCE WITH THE HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FROM THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), WE ARE ENCLOSING A MATERIAL SAFETY DATA SHEET (MSDS) FOR THE FOLLOWING:

PRODUCT CODE

D40030

Arizone 4115 W Turney Avenue Phoenix, Arizona 85019 Phone 602-233-2000

800-350-2436 Fax 602-233-9190

Seattle

4510 B Street NW Auburn, Washington 99001 Phone 206-859-2979

Fax 206-859-3020

Vancouver 7208 NE St Johns Road Vancouver, Washington 98665 Phone 206-694-2521 From Portland 503-239-1566

Fax 206-737-8537

THE MSDS'S SHOULD BE UTILIZED FOR THE EDUCATION AND TRAINING OF YOUR EMPLOYEES AS TO THE PROPERTIES, HAZARDS, AND PROTECTION

REQUIREMENTS RELATED TO THE PRODUCTS WHICH YOU PURCHASE FROM

TARR, INCORPORATED.

SINCERELY,

Mike Rooney

ENVIRONMENTAL AND SAFETY COORDINATOR





Material Safety Data Sheet

Page 1 of 7

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON DELO 400 SAE 30

PRODUCT NUMBER(S): CPS235118 CPS238052

COMPANY IDENTIFICATION

EMERGENCY TELEPHONE NUMBERS

Chevron USA Products Company Environmental, Safety, and Health Room 2900 575 Market St. San Francisco, CA 94105-2856 HEALTH (24 hr): (800)231-0623 or (510)231-0623 (International) TRANSPORTATION (24 hr): CHEMTREC (800)424-9300 or (202)483-7616

PRODUCT INFORMATION: MSDS Requests: (800) 228-3500

Environmental, Safety, & Health Info: (415) 894-1899

Product Information: (800) 582-3835

2. COMPOSITION/INFORMATION ON INGREDIENTS

100.0 % CHEVRON DELO 400 SAE 30

CONTAINING

COMPONENTS AMOUNT LIMIT/QTY AGENCY/TYPE

LUBRICATING BASE OIL SEVERELY REFINED PETROLEUM DISTILLATE

> 80.0%

5 mg/m3 (mist) ACGIH TWA 10 mg/m3 (mist) ACGIH STEL 5 mg/m3 (mist) OSHA PEL

The BASE OIL may be a mixture of any of the following: CAS 64741884. CAS 64741895, CAS 64741964, CAS 64741975, CAS 64742014, CAS 64742525, CAS 64742536, CAS 64742547, CAS 64742627, CAS 64742650, or CAS 72623837.

ADDITIVES INCLUDING THE FOLLOWING < 20.0%

Revision Number: 3 Revision Data: 09/28/94 MSDS Number: 005599
NDA - No Data Available NA - Not Applicable

Prepared according to the OSHA Haward Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (2400.1) by the Toxicology and Health Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-002051 (06-89)

ZINC ALKYL DITHIOPHOSPHATE

Chemical Name: PHOSPHORODITHIOIC ACID,O,O-DI-C1-14-ALKYL ESTERS, ZINC SALT CAS68649423 < 1.6%

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

TLV - Threshold Limit Value TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity PEL - Permissible Exposure Limit

C - Ceiling Limit CAS - Chemical Abstract Service Number

Al-5 - Appendix A Categories () - Change Has Been Proposed

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

EYE:

This substance is not expected to cause prolonged or significant eye irritation. This hazard evaluation is based on the data from similar materials.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. Prolonged or repeated breathing of petroleum oil mist can cause respiratory irritation. This hazard evaluation is based on data from similar materials.

SIGNS AND SYMPTOMS OF EXPOSURE:

INHALATION: Respiratory tract irritation may include, but may not be limited to, one or more of the following: nasal discharge, sore throat, coughing, bronchitis, pulmonary edema and difficulty in breathing.

4. FIRST AID MEASURES

EYE:

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599

NDA - No Data Available NA - Not Applicable

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worm.

SKIN:

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INCESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: (COC) 419F (210C) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lover: NA Upper: NA EXTINGUISHING MEDIA:

CO2, Dry Chemical, Foam and Water Fog.

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide and water vapor and may produce oxides of sulfur, nitrogen, phosphorus, and boron. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr); (800)424-9300 or (202)483-7616 ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force. DO NOT weld, heat or drill container. Residue may

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599

NDA - No Data Available NA - Not Applicable

X-005021 (01-89)

ignite with explosive violence if heated sufficiently.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

ENGINEERING CONTROLS:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

NDA

PHYSICAL DESCRIPTION:

Dark brown liquid.

pH:

VAPOR PRESSURE: NA

VAPOR DENSITY

(AIR=1): NA

BOILING POINT: NA

FREEZING POINT: NDA MELTING POINT: NA

SOLUBILITY:

Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.88 **0 15.6/15.6**C

EVAPORATION RATE: Nλ

11.6 cSt @ 100C (Min.) VISCOSITY:

PERCENT VOLATILE

(VOL):

NA

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA.

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates,

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599 MA - Not Applicable NDA - No Data Available

X-DOS021 (01-89)

peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrocracking. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

ENVIRONMENTAL FATE:

This material is not expected to present any environmental problems other than those associated with oil spills.

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Oil collection services and collection centers are available for used motor oil recycling or disposal. Some service stations, automotive service centers, and retailers provide motor oil collection facilities.

Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA	311	CATEGORIES:	1.	Immediate (Acute)	Health	Effects:	NO
			2.	Delayed (Chronic)	Health	Effects:	NO
			3.	Fire Hazard:			NO

4. Sudden Release of Pressure Hazard: NO

5. Reactivity Hazard: NO

REGULATORY LISTS SEARCHED:

11=NJ RTK	22=TSCA Sect 5(a)(2)
12=CERCLA 302.4	23=TSCA Sect 6
13=MN RTK	24=TSCA Sect 12(b)
14=ACGIH TWA	25=TSCA Sect 8(a)
15=ACGIH STEL	26=TSCA Sect 8(d)
16=ACGIH Calc TLV	27=TSCA Sect 4(a)
17-OSHA PEL	28=Canadian WHMIS
18=DOT Marine Pollutant	29=OSHA CEILING
19=Chevron TWA	30=Chevron STEL
20=EPA Carcinogen	
	12=CERCLA 302.4 13=MN RTK 14=ACGIH TWA 15=ACGIH STEL 16=ACGIH Calc TLV 17-OSHA PEL 18=DOT Marine Pollutant 19=Chevron TWA

The following components of this material are found on the regulatory

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 805599
NDA - No Data Available NA - Not Applicable

lists indicated.

PHOSPHORODITHIOIC ACID, 0, 0-DI-C1-14-ALKYL ESTERS, ZINC SALTS is found on lists: 01,11, SEVERELY REFINED PETROLEUM DISTILLATE is found on lists: 14,15,17,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

This revision updates Section 3 (Hazards ID.), Section 4 (First Aid Measures), Section 8 (Exposure Controls/Personal Protection) and Section 15 (Regulatory Information).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the data hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 3 Revision Date: 09/28/94 MSDS Number: 005599



CALGAZ

Air Liquide America Corp. Cambridge Plant 821 Chesapeake Drive Cambridge, Maryland 21613 USA Tel: (410) 228-6400 ext 103

(800) 638-1197 ext 103

Fax: (410) 228-4251

Property of Air Liquide America Corporation. The information contained in this facsimile message is intended only for the use of the individual or entity named below and may be confidential. If the reader of this message is not the intended recipient, you are hereby notified that any unauthorized dissemination, distribution or copy of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone. THANK YOU

From: Vicki Lewis, Customer Service Representative Please deliver the following message of 3 pages to

Name:	Howard & Markeson
Firm:	DSA GIONE CEMENTO.
Fax Number:	503-289-2272
Date:	7-31-95

Regarding our earlier telephone conversation you will find our "Material Safety Data Sheet" for the following gases:

Zero air

Thank you for your continued interest in the "Calgaz" product line.

Have a G ♥ D day!!!

Victi

						Pege
LEANDONS MET	VINES OF STREET CO	OURS, SOLIDA, OR GAMES				
		•	N/A			
		PHYSIC	AL DATA			
117.9°F	(-194.4°C)		54 70 1	HT AT BOW 15/ft ³	(876.21 kg/m³)	
40 17015 A	₽ 70°F (2I	.1°C) above the	GAS MONITO	7 AT 79"F 14		_
<u>intical t</u>	ma 9 68°F	of -220.4°F (-140.2°C) (20°C) Bunsen	.0749 Ib	o/ft² ouer N/	1.200 kg/m ³) l; Bubble Point V I Atm. =	<u>-</u>
efficien	t = .0183		-317.8°F	(-19 0	1.35°C)	
		as, Specific gravity	270°F (Ai	ir = 1.0)) fs 1.0.	
		FIRE AND EXPLOSI	ON HAZA	NO GAT	A	
er Poelt desi A	NOO LINES	ARTO HANTON TEMPERATURE	F	- LUMBURY	LIMITS & BY POLICE	
THE DESIGNATION OF THE					N/A PLECTRICAL CLASSIFICATION	
nflannab CALFINE NO	P GAS				Nonhazardous	
A .						
npressed te than	air at nigi they burn at	n pressures will accele t atmospheric pressure. REACTIVI	•		g of materials to a great	er
ILITY STATES	 	CONTRIONS TO AVER				_
	×					
TARREST (-					
AADOMS DECO	MPOSTION PROSU	ers				
NRE DARDOGUM POLY		CONDITIONS TO AVOID				
P Not Occus	X					
		SPILL OR LEAK	PROCEDL	URIES		
S TO BE TACE	H CASE MATERIA	4 STELLARD OR STILLED				
		N	I/A			
TE CHINOCAL I	ENIOD					
		H	I/A			

EMERGENCY RESPONSE DIFORMATION IN CASE OF EMERGENCY INVOLVING THIS MATERIAL, CALL DAY OR MIGHT (809) 231-1366

OR CALL CHEMTHEC AT (800) 424-9300

SPECIAL PROTECTION INFORMATION

Page 3

RESPONATIONS PROTECTION	(مورة والبسوال			
N/A WENTS ATTRON				
WENTILATION N/A	COCAL EXHAUST	H/A	SPECIAL	
	MECHANICAL (Gen.)	N/A	OTHER	
Any material				
Safety goggles o	r glasses			
onen protective consus Safety shoes				

SPECIAL PRECAUTIONS*

SANCTUAL IN DESCRIPTION OF THE PARTY AND THE DOT Shipping Name: DOT Hazard Class: Nonflammable gas Air, compressed DOT Shipping Label: Monflammable gas [.D. No.: UN 1002

Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<3,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handling recommendations consult L'Air Liquide's Encyclapedia de Gaz or Congressed Gas Association Pampi ict P-1,

SPECIAL STORM OF RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily traffiched areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130f (540). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional storage recommendations causual L'Air English's Empyclopadia de Gaz or Compressed Gas Association Paraphiet F-E.

Dry air is noncorrosive and may be used with all materials of construction. Moisture causes metal oxides which are formed with mir to be hydrated so that they increase in volume and lose their protective role (rust formation). Concentrations of SO2. Cla, salt, etc. in the moisture enhances the rusting of metals in air.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

ert approies & r. Department of Transportation, Counsessans Safey and Health Administration, Food and Sing Administration and course may nave

Ø 002/003

TRADE NAME AND SYNONYMS: (Com	rtinued)					
Air; Compressed Air; Compressed Air, Breathing Quality						
	·					
Ì						
	·					
NOTE: Atmospheric air which is of gases:	s compressed is composed of the following concentrations					
<u>Gas</u>	Hotar &					
Mitrogen	78.09					
Oxygen	20.94					
Argon	0.93					
Carbon Dioxide	0.033*					
Neon	18.18 x 10 ⁻⁴					
Helium	5.239 x 10 ⁻⁴					
Krypton	1.139 x 10 ⁻⁴					
H ydroge n	0.5 x 10 ⁻⁴					
Teaon	0.086 x 10 ⁻⁴					
Radon	6 × 10 ⁻¹⁸					
Water wapor	Varying concentrations					
* Concentrations may have sligh	et variations.					
This product contains 79 molar	by reconstitution using only oxygen and mitrogem. percent nitrogen and 21 molar percent oxygen plus aric gases which are present in the oxygen and nitrogen.					
	·					



Material Safety Data Sheet

	PRODUCT MARE COMpressed Air	
	TELEPHINE (616) 977-4800 EMBRODICY RESIDENCE INFORMATION ON PAGE 2	
LIGHTO AM COMPONISTON Over California Mazza, Salito 164	TRADE NAME AND WINDHING See last page.	CAS MARIEN N/A
2121 M. California Břed. Walnut Creek. California 94590	CHEMICAL HALVE AND STRICTURES	
SSATE DATE — OCTOBER 1, 1886 MID REVISIONS — COMPOUNTE SATETY DEPE	See note on last page, 28,966	OMERICAL FAMILY N./A

	HËAL	TH HAZARE	DATA		
HALL MEIGHTED AVERAGE EXPORT	ME TINEL				
Mome listed (ACGIH, 1	1984-85).				
SYMPTOMS OF EXPOSURE					
Air is montoxic and i environment such as a symptoms similar to a toes, abnormal sensal sickness paims or "be	underwater diving, overexposure to pu tions, impaired co	caissons one care oxygen, condination	or hyperbaric These inclu- and confusio	chambers d de tingling n. Decompt	can result in of fingers and
TOXICOLOGICAL PROPERTIES					
High pressure effects nervous system. Impr blood.					
Listed as Carolnogen or Potential Carolnogen	National Toxicology Program	Yes ☐ No 図	I.A.R.C. Monographs	Yes □ No ☑	OSHA Yes D No SE
RECONDITION FOR 7 AND TREATME	eptr .				
Facilities or practic should be prepared to Caisson Disease). De	deal with illnes	ses associa	ted with deci		

Adjustments as in the subsidity of enforcing harminists partitions by purposed interceptating performs recognising. Therefore, although no contract the contract of the contra

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203 503-286-1677 • FAX: 289-2272

VENDOR: 00046900

ATTN ORDER DEFARTMENT APOLLO CHEMICAL & EQUIPMENT 6647 NE 47TH AVE. PORTLAND OR 97218

PURCHASE ORDER NO.

89510227

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
 Show purchase order number on invoice, shipping. notice and container label.
- Do not make substitutions without consulting us.
- The right is reserved to cancel this order if delivery is not made as promised.

Date issued	7/28/95
Date Required	8/11/95
Terms	NET 30 DAYS
Via	VENDORS TRUCK
Freight Terms	FOB: DESTINATION

This order is a confirmation on not a confirmation

Item No.	Quantity	Unit of Meas.	Description	Store	No.	Machine No.	Account No.	Price
01	/ 15	GAL	STEAM CLEANER SOAP, APOLLO * M.S.D.S. REQUIRED * Supplier #: SC-575 ** ORIGINAL ORDER **	05-10	900	•	00-00-0420-0008	97 50
			(Par P/3+44675 8/14/95)				·	
į								
			·				·	,
					PPROVAL	ORDER MUST	BE SIGNED TO BE VALID	

Doward Livia K

3H GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203 503-286-1677 • FAX; 289-2272

VENDOR: 00712920

ATTN ORDER DESK POLYGEM INCORPORATED P. O. BOX 609

WEST CHICAGO, IL 5 60185-0609

PURCHASE ORDER NO.

895±0242

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
- Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
 The right is reserved to cancel this order if delivery.
- The right is reserved to cancel this order if delive is not made as promised.

Date issued	7/28/95
Date Required	8/11/95
Terms	NET 30
Via	U.P.S.
Freight Terms	PRE-PAY & ADD

This order is a confirmation in not a confirmation

item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	√ 48	EACH	SILICONE ADHESIVE SEALANT(CLEAR), POLYBAC (CARTRIDGE = 10.3 fl. oz.) END			00-00-0420-0608	3.77
			Supplier #: POLYEAC # 500 CLEAR * M.S.D.S. REQUIRED *	OEM: 500			
<u> </u>			** ORIGINAL ORDER **				
			(Par Inv + 21169 8/14/95)				
İ				-			
				·			
	·					·	
							·
			·				•

APPROVAL

ORDER MUST BE SIGNED TO BE VALID

ASH GROVE CEMENT COMPANY

13939 N. Rivergate Blvd. • Portland, Oregon 97203 503-286-1677 • FAX: 289-2272

VENDOR: 00712920

ATTN KATHY

POLYGEM INCORPORATED

P. O. BOX 609

WEST CHICAGO, IL 60186-0609

PURCHASE ORDER NO.

89510268

INSTRUCTIONS

- Render all invoices in duplicate to plant address.
 Show purchase order number on invoice, shipping notice and container label.
- Do not make substitutions without consulting us.
 The right is reserved to cancel this order if delivery is not made as promised.

- ~		00000	
Date Issued	8/15/95	5	
Date Required	8/29/95	5	
Terms	NET 30		
Via	U.P.S.		
Freight Terms	PRE-PAY	& ADD	

This order is \square a confirmation	not a confirmation
----------------------------------------	--------------------

item No.	Quantity	Unit of Meas.	Description	Store No.	Machine No.	Account No.	Price
01	/ 48		HIGH TEMP. SILICONE SEALANT(RED), POLYBAC (CARTRIDGE = 10.3 fl. oz.) REX	05-10-310		00-00-0420-0008	6,00
			Supplier #: POLYBAC #500 RED	OEM: RED SI	LICONE		
			** ORIGINAL ORDER **				
			(Par Inv # 21272 8/23/95)	•			
				1	i		
		[
,							
		i					
				\$ 1			

APPROVAL

1111

ORDER MUST BE SIGNED TO BE VALID

Material Safety Data Sheet for Lawn Lime

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Lawn Lime

Chemical Family: Primarily a mixture of calcium carbonate and calcium hydroxide and many contain a minor amount of calcium oxide.

Revision Date: August, 1995

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Calcium carbonate, CaCO ₃	1317-65-3	Total dust, 15 mg/m³ Respirable fraction, 5 mg/m³**	10 mg/m ³ *
Calcium hydroxide, Ca(OH) ₂	1305-62-0	5 mg/m³	5 mg/m³
Calcium oxide, CaO	1305-78-8	5 mg/m³	2 mg/m³

^{*}Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

Lawn Lime can contain quartz >0.1%. The OSHA PEL for quartz is $\frac{10\text{mg/m}^3}{\text{% SiO}_2+2}$ respirable dust only.

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m³.

ACGIH

American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL

Permissible Exposure Limit

TLV

Threshold Limit Value

^{**}Unless contains > 1% crystalline silica (quartz)

Section III - Physical/Chemical Characteristics

Chemical Family:

Inorganic Base

Specific Gravity:

Approximate range 2.3 to 2.60

Vapor Pressure(mm Hg): 0

Vapor Density:

(Air=1) NA

Evaporation Rate:

NA

Solubility in Water:

0.0014% (25°C)

Appearance and Odor:

Soft white powder or granules; faint odor Calcium hydroxide-decomposes above 600°C

Melting Point:

Calcium carbonate-decomposes above 900°C

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Lawn Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA **UEL: NA**

Extinguishing Media: NA

Special Fire Fighting Procedures: Lawn Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or

fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Lawn Lime can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

- 1. Inhalation: corrosive
 - Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - Chronic exposure: Bronchial irritation with chronic cough are common. b.

Section V - Health Hazard Data - (Continued)

- c. First aid: Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.
- 2. Skin contact: corrosive
 - a. Acute exposure: The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. Chronic exposure: A chronic dermatitis may follow repeated contact.
 - c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
 - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
 - First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes).
 Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Quartz listed as an OSHA carcinogen: NO By NTP; YES By IARC; YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling:

Avoid generation of excessive dust.

Storing:

Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: A NIOSH-MSHA approved respirator with dust filtering capability must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes; use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

National Sanitary Supply Co-P-O- Box 61126 Los Angeles, Ca 90061 (213) 770-1970

5/24/94 2813 TOTONCHY, TALAL 193150

ASH GROVE CEMENT WEST, INC. 13939 N RIVERGATE BLVD PC BOX 03007 PCRTLAND OR 97203

Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal CSHA Hazard Communication Final Standard 29 (FR 1910. 1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnessess in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerely,

Maria F. Frias Executive Administration

Material Safety Data Sheet
May be used to Comply with
OSHA's Hezard Communication Standard 29 CFR 1910.
Standard must be consulted for specific requirement.

U.S. Department of Labor Occupational Safety and Health Administration (Non-Mandalory Form) Form Approved OMB No. 1218-0072

	Water Solubie	Super Industri	al Clauner	1				
	FUG Deglette	f		NOTE: Blank i	n els security	ot permitted. Nilable, the er	If any item is not app	ilcable, or no to indicate ther
Section I-		Name	(Address,	Street, City, St.	ale. & Zip Co		ARD RATING	
Sun Ener	gy Product		En	lergency Telopia	one Number	HEAL		0 - Minimal
P. O. Box	.89 2 10uuct :9926	3	72	(305) 484-5 laphona Numbe	300	ी हा रा	MABILITY O	1 - Bilght 2 - Moderne
	derdale, FL	33310	<u>-</u>	(305) 484-5		REAR	TIVITY	0 - Serious 4 - Extreme
				e Prepared		Protec	tive Equipment:	
section II-	Hazardous	ingrediente	/ Identine	vised: 9/7/95		G000	es, Gloves	-
ついてきいいりいき (プロリ	DDGDBDLA (Kinen	iffy Chambout Id		on Namoe)	OSHA PEL	ACGIH TL	Other Limits V Recommended	% (optional)
ropylone Glyco	of T-Buily/ Ether	CAS#57018-5	2-7		Not Est.	Not Est.	NA	t ve (obttotitit)
Methanol CAS#6 Subject to the in CFR 372.	67-50-1 epotitug require	ements of Sec. :	313of Sara T	Title fil of 40	200 ppm	200 ppm	250 ppm (STEL)	э
odium Metasilio	ate CAS #6	834-92-0			15 mg/m3	16 mg/m3	N/A	
onyiphanoi + 9	EO Polyethoxyl	ale CAS#8018	-45-9		Not Est.	Not Est.	N/A	
	ر موليون وجو لومل المحالية الم							
eotlan III Siling Point	Physical Ch	temical Che	racteristic	Specific Grav	IN WATER	1111111	3 P	
		·**		<u></u>		i i		
spor Pressure	No		· · · · · · · · · · · · · · · · · · ·	Melting Point		NA		
por Density	ND			Evaporation	dala	No No		
lubility in Wate	l Infinite			Levaporation	, 1610 			
TOWNEY IT WATE	I							
peerance and	Odor Olear pin	k liquid wah mil	d oltrus odor					
ction IVF	ire and Ex	plosion Haz						
aeh Polisi			Flammable	Linits		LEL	UEL	
ninguishing Me						NA	N/A	.
	bon dioxide, fos	medo ynb to ma	ic e.i					
	ing Procedures	-			 			
seif containe	d breathing ap	paretus when f	ghting fires.					
•	, - ••						er i dagag weday da da	
	-	stele						-
	Explosion Flazs	1100						
	Explosion Plaze		. ,	-				•
	Explosion Plaze		. '					•
ก●						5283	/ Water Soluble Sup	•
ne Section	Explosion Plaza	ity Data	anditions to A	rold		5283	/ Water Soluble Sup	•
ก●		ity Date	onditions to A			5283	/ Water Soluble Sup	•
ne Section		Unstable Co				5263	/ Water Soluble Sup	•
ne Section	VRoactiv	Unstable Co	tremes in ten	peratura		5263	/ Water Soluble Sup	•
Section Stability	VReactiv	Unstable Co Stable X	k arrang entiti	nperature		5283	/ Water Soluble Sup	•
Section Stability Incombs (**-serial	vReactive IAU	Unstable Co Stable S Stable S	dremes in ten	peratura	n dlexide.		/ Water Soluble Sup	•
Section Stability Incombs (** arial Decon- or Bypit	WReactive IAu Inbitity Is to Aveid) Individual Euroin Diducts May C	Unstable Co Stable S Stable S O cap produce	carbon inohox	perature	en diexide.		/ Water Soluble Sup	•
Section Stability Incomos (**	w-Freactive intention in the intention i	Occur X	dremes in ten	ing equite	on diexide.		/ Water Soluble Sup	•
Section Stability Incomba (** arial Peron* or Bypit Herardo Polymer	wReactive intention of the Aveid in the Av	Occur Old Cocur Old Cocur Old Cocur Old Cocur Old Cocur Old Cocur A Hazard De	Conditiona to Avoid	parature The activity Ide and/or carbo				•
Section Stability Incomos (**	w-Feactive inbility is to Aveid) was Euroin Diducts was May Control its allon Will Not 19 Vi-Health of Entry: In	Occur X Hazard Dalahation? Ye	Conditiona to Avoid	ing equite				•
Section Stability Incombs (** arial Hezardo or Bypre Hezardo Polymer Section Health F Acute: o	wReactive intention of the Aveid in the Av	Occur Occur Hazard Deindeling (Control of Occur) Hazard Deindeling (Control of Occur)	Conditions to Avoid	Parature Find a Conte	- (a	Ingeet	on? Yes	•
Section Stability Incombs (** arial Hezardo or Bypre Hezardo Polymer Section Health F Acute: o	websity to to Avoid) websity to to Avoid) websity to to Avoid) websity to to Avoid) May Course websity to Vr-Hoalth of Entry: In fazerde (Aoute an cause eye a	Occur Occur Hazard Deindeling (Control of Occur) Hazard Deindeling (Control of Occur)	Conditions to Avoid	Parature Find a Conte	- (a	Ingeet	on? Yes	•





SCIENTIFIC INSTRUMENTS LABORATORY APPARATUS EQUIPMENT, CHEMICALS

Nurnberg Scientific DIVISION OF NURNBERG THERMOMETER CO. INC.

6310 S. W. VIRGINIA AVE. PORTLAND, OREGON 97201 Telephone (503) 246-8297 FAX 503-246-0350

TELECOPIER TRANSMITTAL COVER SHEET

DATE: September 29,1995 TIME: 35pm
RECEIVING FAX NUMBER: (503) 28 9 - 2272
ORIGINATING FAX NUMBER (503) 246-0360
DELIVER TO: Howard
Go Ashgrove Cement West, Inc.
SENT BY: Kathy
NUMBER OF PAGES TO FOLLOW:
special instructions: Here are the MSDS sheets you requested
PLEASE CALL (503) 246-8297 IF YOU HAVE ANY QUESTIONS ABOUT THIS TRANSMISSION ASK FOR:

The state of the	Naterial Safety Data Sheet	79	Material Safety I	Data Sheet	
Table for sici and dust production where needed. Table for a sici and dust production where needed. Table for a sici and dust production where needed. Table for a sici and dust production where needed. Table for a sici and dust production where needed. Table for a sic and dust production where needed. Table for a sic and dust production where needed. Table for a sic and dust production where needed. Table for a sic and dust production where needed in the sic and dust production where the sic and dust producti	Red sird Service 203 Western Ave. Osgood, in 41937 Phone 560-428-350 OM FOR Lundsmit Call Chestred 24-house a 8ay980-424-9100	TION	200 a	ice d in 47037 For Entropy 7860-424-9300	Product: SOOtum HYDROXIDE External TO: 8-400 NSCS No: RS / S-400 Revision: 2 Date: Jaky 9, 1992
International production where moded. Respectively International production International Internatio	SPECIAL PROTECTION INTORRATION CON		Maticust Paint and Costings	HEALTH HASAPI	岸
Land of North and the continue and the	Respirator: Use filter-type respirator for sist: wortmists considerations:	where	Mezardome Material Mezardome Material Ldentification	REACTIVITY HARARI	┅╊╌╂┅
Track-(Markell Mall De available de sautor noch. IL STREILL SECTION CONTRA MANDES CON	Ventilation: Provide adequate ventilation to meet	i de Ci			
Trade/faterial Name: DORING REGION RE	Safety etations: Essain foundains and safety shoust.		urous	H	CATION
The registration of the recompanies of the recompan	equipment: Laurder any		ij	DROKIDE 2.00 NOZNAL SOL	UNION
This and testing conditions that the testing conditions that the testing conditions that the testing the testing of the testin	SECTION BY. SPECIAL PIEC	MATTONS	Caust	3	a Pu Ascer.
Depreciation Name: CAS Bumbur: Recomet: Zaporum Sodium Hydroxide 1310-73-2 B Calling Information Inf	Storage segregation: Store in reil-sealed contains	rs. Avoid harding conditions that	3	9 7	
months witting band to avoid the saving of t	may lead to egying end the selected Special bondited / storage: Wherever take salerial	of to termation of milet of outt		II. INCREDIENTS AND	AZAPOS
in or be permitted to handle this material without protective equipment. Sodium Sydronide used, stundamt water (professiony remains water) as Desira for standam or use areas for this saferial addresser, and district of saille and fluctions has	cuid be available for energency was. should have retention basins for pa fore discharce.	į		e.msodrz	
we implain the charter un-1824 White was implained by the charter in 1732-18-1 Balance in in	Engineering controls: Workers should not be permit proper training on to work	ted to handle this material without ith it without protective equipment.	Sodium Hydroxide	1310-73-2	
This mediator: UN-1824 This chaster is a service. This chaster is a service at the course of the service are service. This chaster is a service at the service of the service of the service at the service of	Shipping Name: Sodium Hydroxide Solution				relating to norm
figuration herein for purchaser's purposes are specially false; of rests of continues on tases. Figuration herein for purchaser's purposes are shadely false; (alse);	DCF Class: Corrosive Material Data source ordeis): W. Mall,SAX,HTPA, TRS(rev.	iter: UM-1826			Skin, Rebbit: 50 Skin, Rebbit: 50 H97248 Severe:
This cheeks 1992 This cheeks 1 1992 This che	Preparadisations by: Gene C. Feith				Strate.
The saitability of information herein for purchaser's purposes are saitability. Therefore, eithough reasonable care has been saying production to such information herein for purchaser's area navient of such information for such saitability as to the accuracy or stillty of such information for application to purchaser's intended purposes or an exceeding the second purposes or an exceeding the second purposes. The same of such saitability as to the accuracy or stillty of such information for application to purchaser's intended purposes or an exceeding the second purposes or saying the second	441y 9, 1992		chesical	7732-16-5	:
The straightful of information here in for purchaser's purposes are standard to the straightful of information here in for purchaser's purposes are standard to the straightful of the s					
Building podent: Caller Transfer Programmes as to the suitability of information herein for purchaser's purposes are vego density (air's); 9.7 (water) therefore, although reasonable care has been starfly and preparation of social information and assumer no responsibility as to the accourage of the suitability as to the accourage of the social information of accountability as to the accourage of the social information of accountability as to the accourage or sitting of such accourage of the social information of accountability as to the accourage or separation of accountability as to the accourage or separation of accountability as to the accourage or separation of accountable or application to purchaser's intended purposes or reasonable of such accourage or the social accourage of the social accourage or the social accountability as to the accourage or the social accourage or the s			clear	storiose Month with on	And the second
Heafs as to the switzbility of information herein for purchaser's purposes are introduced as to the switzbility. Therefore, although reasonable care has been in the preparation of accordate, although reasonable care has been in the progression and assume contraction servents on application to purchaser's intended purposes or its use. Therefore a fit use in the progression of MSDS 3-600 contisues on page 1 Fage 4 Fage 1 Fage 5 Fage 1 Fage 6 Fage 1 Fage 6 Fage 1			Builing point: ca 1 Vacor pressure: 14 solutility (%): Complensity (alexi): 0.7		poration rate: ile by volume:
2nd of MSDS S-446 Fege 4 Fage 1 MSDS S-100 continues on page 2	Underseats as to the suitability of information he necessarily purchaser a responsibility. Therefore taken in the presentation of ascent information, Red makes no representations and ascens for exponsibility of every information for application for the consequences of its use.	rein for purchaser's purposes are , although reasonable care has been Bird Scrytce extends no warrantles, lilty as to the accuracy or see	, J		
	:	_		S-100 continues on	****

79.0

ΤO

Naterial Safaty Bate Shapt

Product: SODIUM HIDROXIDE 2.40 RORELL SOLUTION External ID: 5-440 MSOS No: RBS / 8-400 Nevision: 2 Osts: July 9, 1992 Red Eind Service 215 Western Ave. pogrood, 14 (102) Phure 286-426-352 Of FOR EMBEGING, Call Cheater 14-hours a day...800-424-9308

Materisi Safety Data Sheat

SECTION IV. PIRE AND EXPLOSION DATA

UEL 4: N/A Linite: LEL 4: N/A Flash Point (sethod): None - not combostible

Reactivity: 0 Special: 0 Autologition Temp: Extlaguishing Modia: Goo that which is appropriate for extraorists for unconstant to the used to cool containers. ersh Pire Marard Symbol Codes: Flammability: G Health: 1

2 Special fire-fighting procedures: This solution can react with certain estain, such as alumina, to generate flassable indicaous gas... (See also Rectarity Data, Soction V) explosion hazards: Although this material is nonflammable, it may dangerous in a fire. Courses fire or

SECTION V. REACTIVITY DATA

Chesical incompatibilities: Under the proper conditions of temperature and pressure, it can react with acetic acid, acetaldehyde and metals. Atterial is stable under ordinary conditions of storage and use. Hazardous polymerization cannot occur

Conditions to avoid: Avoid contact with leather and wood and with aluminum, tin, zinc. and silvys which contain these metals.

Examinus decomposition Products: No hazardous decomposition products

SECTION VI. REALTH BASARD INTORDATION

This product is not considered a carcinomen

Summary of rishe: Sodium hydroxide is a strong sikali and is dangerous when the expectly handled. It can be destructive to all human tissue is contacts, producing severe burns. Eve contact can produce severe or personent injury. Oust or what the halfles the contact can produce severe or personent injury. Oust or what the author are injury in the early respiratory tract. Ingestion can cause severe damage to account seminary and other tissue it contacts. Prolonged contact with diluke abulations can have a destructive effect upon tissue.

medical conditions which may be aggravated by controt: Persons with pre-existing skin disorders or sys problems or impalred respiratory function may be more susceptible to the effects of this substance.

REALTH MEAZARD INFORMATION continues on page 3

Page 2

Rod Bird Service 105 Western Ave. Gogood, In 47817 Phone 606-421-3542 OK PUR BYERGENCY, Call Chemires 21-hours a day...600-424-9340

Product: 4001UM HYDROKIDE 2.40 MORMAL SOLUTION Internal ID: 4-400 MSDS No: RBS / 8-400 Meriaton: 2 Date: July 9, 1992

MEALTH HAZARD INTOFMARION continued from page 2

Piret aid:

Wesh eyes innodiately with plenty of running water for no less than 12 ainutes, including under the eyelds and all auritaces. Speed in ringing out the eyes with water after contect is extremely important in personent injury is to be avoided. Contact physician as even as even as possible. Contact rapidly causes severe danged to the delicate tissue. Mys contact: Hesh

Mach contact area promptly with large quantities of water. (Dilute seetic seed, vineys; can be used to neutralize.) Remove contaminated digitalize, leading factories of thing upday the father. Prolung weaking in settions cases until sedical help arrives even for an hour or longer, (see comments for further into.) Skin contact: Nach

Imbalation: Memove from exponence to mist or dust and get prompt medical help.

Ingestion: Immediately dilute chasical by drinking large ascents of sater of all, then neutralise with dilute viewurs or interior vanities are cour specimensely, but do not impedient to an encouragely, but give anything by mouth to an encouraging parson.

Physician should see all cases other than simor exposures to seall areas of skin. Contact lenses pose a special hazard, Soft lenses absorb and all lenses concentrate irritants.

SECTION VII. SPILL, LLAK AND DISPOSAL PROCESURES

Sail) / Leak procedures: Fluch conteminated surfaces with water and newtralies with falling acid, preferably scetter acid, to respoy a final traces. (Socium bicarbonute say also be used to privially newtralize.) Thailly, finse with seter.

Waste management, Gisposal: Disposal of waste is greatly dependent on local conditions and soutsevents. Fre-emergacy plans should be adde to meet legal and technical requirements, Waste causaic should have be deliberablely discharged directly into severa or successed (First, convert to marked sales and dilute well with vater; Follow all State, Rederal and local regulations.

SECTION WILL SPECIAL PROFECTION INTORNATION

protective equipment:

g

coggles: Use chemical safety goggles! A pisatic face shield can also be used.

Glowes: Use rubber glows, rubber spron or protective clathing, rubber boots where foreced to prevent confact with sodium hydroxide, especially when additions are used.

Page 3

80

SPECIAL PROTECTION INCOMMITTEN continues on page 4

Appendix33-001369

Red Bird Service 205 Western Ave. Osgood, IN 47037 Phone 800-428-3502 OR FOR EMERGENCY, Call Chemtrec 24-hours a day...800-424-9300

Product: SODIUM HYDROXIDE 0.25

NORMAL.

Internal ID: 5-455

MSDS No: RBS / S-455

Revision: 2 Date: July 9, 1992

National Paint and Coatings Association

Hazardous Material Identification System

HEALTH HAZARD	2 - Moderate
FLAMMABILITY HAZARD	0 - Minimal
REACTIVITY HAZARD	1 - Slight
PERSONAL PROTECTION	C - Glasses,

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: SODIUM HYDROXIDE 0.25 NORMAL

Description: A standardized solution of Sodium Hydroxide.

Other Designations: Caustic Soda, Soda Lye, NaOH

Manufacturer: Red Bird Service

SECTION II. INGREDIENTS AND HAZARDS

. Ingredient Name:

CAS Number:

Percent:

Exposure Limits:

Sodium Hydroxide

1310-73-2

1.00

Ceiling Limit 2 mg/m3 No LD50 information found relating to normal routes of exposure. Irritation data: Skin, Rabbit: 50 mg/24H Severe. Eye Rabbit: 50 mg/24H Severe.

Water

7732-18-5

Balance

This chemical is TSCA Reference.

SECTION III. PHYSICAL DATA

Appearance & Odor: A clear, colorless liquid with no odor.

Roiling point: 100 °C
Vapor pressure: 14 (Water)
Water solubility (%): Complete
Vapor density (air=1): 0.7 (water)

Evaporation rate: BuAc = 1:

Greater than 1

* volatile by volume: 99

Page 1 ---

MSDS S-455 continues on page 2

TO

Material Safety Data Sheet

Red Bird Service 205 Western Ave. Osgood, IN 47037 Phone 800-428-3502 OR FOR EMERGENCY, Call Chemtrec 24-hours a day...800-424-9300

Product: SODIUM HYDROXIDE 0.25

NORMAL Internal ID: S-455

MSDS No: RBS / S-455 Revision: Date: July 9, 1992

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): None - not

Limits: LEL %: N/A

UEL E: N/A

combustible

NFFA Fire Hazard Symbol Codes: Flammability: 0 Health: 2 Reactivity: 1

Extinguishing Media: Although it is not combustible, it can be hazardous if present in a fire area.

Autoignition Temp:

thosual fire or explosion hazards: This solution can react with certain metals, such as aluminum, to produce flammable hydrogen gas.

Special fire-fighting procedures: Firefighters should wear self-contained breathing apparatus and full protective clothing when this material is involved in a fire.

SECTION V. REACTIVITY DATA

Material is stable under ordinary conditions of storage and use. Hazardous polymerization cannot occur

Chemical incompatibilities: Slowly it can pick up moisture from the air and react with carbon dioxide from the air to form sodium carbonate.

Conditions to avoid: Avoid contact with leather and wool and with aluminum, tin, zinc, and alloys which contain these metals.

Hazardous decomposition Products: No hazardous decomposition products.

SECTION VI. HEALTH HAZARD INFORMATION

This product is not considered a carcinogen

Summary of risks: This solution can be dangerous when improperly handled. It can be destructive to all human tissue it contacts producing burns. Eye contact can cause irritation and with greater exposure, severe burns with possible permanent injury or blindness. Dust or mist inhalation can injure the entire respiratory tract, ranging from mild to serious damage. Skin contact can cause irritation or burns. Ingestion may cause burns of mouth, throat and stomach.

Medical conditions which may be aggravated by contact: Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of this substance.

First aid:

Page 2 ---

Eye contact: Wash eyes immediately with plenty of running water for no less than 30 minutes, including under the eyelids and all surfaces. Speed in rinsing out the eyes with water after contact is extremely important if permanent injury is to be avoided. Contact physician as soon as possible.

HEALTH HAZARD INFORMATION continues on page 3

ΤÖ

Red Bird Service 205 Western Ave. Osgood, IN 47037 Phone 800-428-3502 OR FOR EMERGENCY, Call Chemtrec 24-hours a day...800-424-9300 Product: SODIUM HYDROXIDE 0.25

NORMAL Internal ID: S-455

MSDS No: RBS / 5-455 Revision: 2 Date: July 9, 1992

HEALTH HAZARD INFORMATION continued from page 2.

Skin contact: Wash contact area promptly with large quantities of water for 30-minutes.

Inhalation: Remove from exposure to mist and get medical help.

Ingestion: Immediately dilute chemical by drinking large amounts of water or milk. Vomiting may occur spontaneously, but do not induce it. Contact a physician promptly. Never give anything by mouth to an unconscious person.

Physician should see all cases other than minor exposures to small areas of skin. . .

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Flush contaminated surfaces with water and neutralize with dilute acid, preferably acetic acid, to remove final traces. (Sodium bicarbonate may also be used to partially neutralize.) Finally, rinse with water.

Maste management / Disposal: Disposal of waste is greatly dependent on local conditions and requirements. Pre-emergency plans should be made to meet legal and technical requirements. Waste caustic should never be deliberately discharged directly into sewers or surface waters. (First, convert to neutral salts and dilute well with water.) Follow all state, federal and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Use chemical safety goggles! A plastic face shield can also be used.

Gloves: Use rubber gloves, rubber apron or protective clothing when solutions

are used.

Respirator: Use filter-type respirator for mist and dust protection where needed.

Morkplace considerations:

Ventilation: Provide adequate ventilation to meet TLV requirements, especially where dusting or misting conditions can exist.

Safety stations:

Eye wash fountains and safety showers should be available in nearby work area.

Contaminated equipment: Launder any clothing before reuse.

Contact lenses pose a special health hazard; Soft lenses absorb and all lenses concentrate irritants.

Page 3 ---

MSDS S-455 continues on page 4

Red Bird Service 205 Western Ave. Osgood, IN 47037 Fhone 800-428-3502 OR FOR EMERGENCY, Call Chemtred 24-hours a day...800-424-9300

Product: SODIUM HYDROXIDE 0.25

NORMAL

Internal ID: S-455

MSDS No: RBS / 5-455 Revision; 2 Date: July 9, 1992

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Store in well-sealed containers. Avoid handling conditions that may lead to spills and leaks, or to formation of mist or dust.

DOT Class: Not Regulated
Data source code(s): N, Mall, CFR, RBS(rev.)

Prepared/cevised by: Gene C. Feith

July 9, 1992

Judgements as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has be taken in the preparation of such information, Red Bird Service extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for the consequences of its use.

Page 4 ---

End of MSDS S-455

Red Bird Service 205 Western Ave. Osgood, IN 47037 Phone 800-428-3502 OR FOR EMERGENCY, Call Chemtrec 24-hours a day...800-424-9300

Product: HYDROCHLORIC ACID

0.500 NORMAL

Internal ID: H-180

MSDS No: RBS / H-180 Revision: 4

Date: September 8, 1993

National Paint and Coatings Association

T

Hazardous Material Identification System

HEALTH HAZARD	1 - Slight
FLAMMABILITY HAZARD	0 - Minimal
REACTIVITY HAZARD	0 - Minimal
PERSONAL PROTECTION	SEE SECTION 8

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: HYDROCHLORIC ACID 0.500 NORMAL

Description: A standardized solution of Hydrochloric Acid.

Other Designations: Hydrochloric Acid N/2

<u>Cautions</u>: Hydrochloric acid is highly corrosive and causes serious skin and eye burns as well as acute and chronic respiratory problems.

nufacturer: Red Bird Service

SECTION I	II. INGREDIENTS	AND HAZARDS	

Ingredient Name: Hydrochloric acid * (***) CAS Number: 7647-01-0

Percent:

4,2

Exposure Limits:

1991 OSHA PEL Ceiling: 5 ppm (7

mg/m3) 1991-92 ACGIH TLV Ceiling: 5 ppm (7.5

mg/m3) 1990 NIOSH REL

Ceiling: 5 ppm (7

mg/m3) 1990 DFG (Germany)

MAK

Ceiling: 5 ppm (7 mg/m3)

Category 1: local irritants

Peak Exposure Limit: 10 ppm, 5 min momentary value/8 per shift 1985-86 Toxicity

Data**

Human, inhalation, LCLo: 1300 ppm/30 min; toxic effects not yet reviewed Rabbit, oral, LD50: 900 mg/kg; toxic effects not

yet reviewed

7732-18-5

Balance

Rat, inhalation,

Water

INGREDIENTS AND HAZARDS continues on page 2

--- Page 1

Page ! ---

Red Bird Service 205 Western Ave. Osgood, IN 47037 Phone 800-428-3502 OR FOR EMERGENCY, Call Chemtrec 24-hours a day...800-424-9300 product: HYDROCHLORIC ACID 0.500 NORMAL

Internal ID: H-180

MSDS No: RBS / H-180

Revision: 4

Date: September 8, 1993

INGREDIENTS AND HAZARDS continued from page 1

TCLo: 450 mg/m3/1 hr (1 day prior to pregnancy) produced fetotoxicity (except death) & specific developmental abnormalities (homeostasis). Rabbit, eye: 100 mg rinse caused mild irritation. 1990 IDLH Level 100 ppm

* Trace impurities include ammonia, arsenic, iron, sulfate, free Cl-, and heavy metals. ** See NIOSH, RIECS (MW4025000), for additional irritation, reproductive, and toxicity data.

*** This chemical is subject to section 313 reporting.

This chemical is TSCA Referenced.

SECTION III. PHYSICAL DATA

Appearance & Odor: Colorless liquid that fumes in air and has a strong pungent odor. Can be slightly yellow from traces of iron, chlorine, or organic matter.

Soiling point: ca 100°C Vapor pressure: 14 like water Water solubility (%): Complete Vapor density (air=1): 0.7 like water

Evaporation rate: BuAc=1: Greater than 1

volatile by volume: 100

Odor Threshold: 0.1 to 5 ppm

Other Solubilities: Soluble in alcohol, benzene, and ether; insoluble in

hydrocarbons.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): Noncombustible Limits: LEL %: None UEL %: None

reported* reported*

NFPA Fire Hazard Symbol Codes: Flammability: 0 Health, 0 Reactivity: 0 Special:

Extinguishing Media: Use extinguishing agents suitable for Autoignition Temp: surrounding fire. None reported

Unusual fire or explosion hazards: * Extreme heat or contact with many metals liberates hydrogen gas which has explosion limits of 4 to 75%.

Page 2 ---FIRE AND EXPLOSION DATA continues on page 3

TΩ

Material Safety Data Sheet

Red Bird Service 205 Western Ave. Osgood, IN 47037 Phone 800-428-3502 OR FOR EMERGENCY, Call Chemtrec 24-hours a day...800-424-9300 Product: HYDROCHLORIC ACID

0.500 NORMAL

Internal ID: H-180

MSDS No: RBS / H-180

Revision: 4 Date: September 8, 1993

FIRE AND EXPLOSION DATA continued from page 2

Special fire-fighting procedures: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Structural firefighter's protective clothing is <u>ineffective</u> for fires involving hydrochloric acid. Stay away from ends of tanks, Cool tanks with water spray until well after fire is out. <u>Do not</u> release runoff from fire control methods to sewers or waterways.

SECTION V. REACTIVITY DATA

Material is stable Hazardous polymerization will not occur

Chemical incompatibilities: Polymerizes on contact with aldehydes or epoxides; attacks most metals (except mercury, silver, gold, platinum, tantalum, and some alloys), some plastics, rubber, and coatings; reacts explosively with alcohols + hydrogen cyanide, potassium permanganate, tetraselenium tetranitride; ignites on contact with fluorine, hexalithium disilicide, metal acetylides or carbides (cesium acetylide, rubidium acetylide); and is incompatible with acetic anhydride, 2-amino athanol, ammonium hydroxide, calcium phosphide, chlorosulfonic acid, 1, Mdifluoroethylene, and ethylene diamine. Continued in Comments.

Conditions to avoid: Avoid contact with incompatibles.

Hazardous decomposition Products: Thermal oxidative decomposition of HCl can produce toxic chloride fumes and explosive hydrogen gas.

* Incompatibilities, continued: Bydrochloric acid is incompatible with ethylene imine, oleum, perchloric acid, s-propiolacetone, proplyene oxide, sodium hydroxide, silver perchlorate + carbon tetrachloride, sulfuric acid, uranium phosphide, acetate, calcium carbide, magnesium bromide, mercuric sulfate, and chlorine + dinitroaniline.

SECTION VI. HEALTH HAZARD INFORMATION

This product is not considered a carcinogen

Summary of risks: HCl is a highly corrosive liquid and depending on concentration and duration of exposure, symptoms range from irritation to ulcerations and permanent injury. This is a dilute solution of Hydrochloric Acid.

Acute effects: Inhalation of vapors or mists may be corrosive to the respiratory tract and can cause tracheal and bronchial epithelium necrosis (tissue death), cough, choking, ulceration. Liquid aspiration can cause pulmonary edema, lung collapse, emphysema and damage to the pulmonary blood vessels. Skin contact with HCl solutions may cause burns and ulcerations. Permanent eye damage may result from splashes. Ingestion is unlikely but if it occurs, symptoms include gray tongue color, corrosion of mucous membranes, esophagus, and stomach, nausea, vomiting, intense thirst, diarrhea, difficulty swallowing, circulatory collapse and possible death.

Chronic effect(s): Repeated or prolonged exposure can cause dermatitis, conjunctivitis, gastritis, photosensitization, tooth erosion, and repeated exposure to mists from heated-metal pickling solutions can cause nose and gum bleeds, ulceration of oral or massl mucosa, and "renders facial skin so tender that shaving is painful." (133)

Page 3 ---

HEALTH HAZARD INFORMATION continues on page 4

Red Bird Service 205 Western Ave. Osgood, IN 47037 Phone 800-428-3502 OR FOR EMERGENCY Call Chemtrec 24-hours a day...800-424-9300 Product: HYDROCHLORIC ACID 0.500 NORMAL

Internal ID: H-180

MSDS No: RBS / H-180

Revision: 4

Date: September 8, 1993

HEALTH HAZARD INFORMATION continued from page 3

Pirst aid:

Eye contact: Do not allow victim to rub or keep eyes tightly shut.

Gently lift eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately.

Skin contact: <u>Quickly</u> remove contaminated clothing. Rinse with flooding amounts of water for at least 15_min. Treat

skin with a 5% triethanolamine solution. For reddened or blistered skin, consult a physician.

Inhalation: Remove exposed person to fresh air and support

breathing as needed.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. Contact a poison control center. Unless the poison control center advises otherwise, have that conscious and alert person drink 1 to 2 glasses of water to dilute. Do not induce vomiting!

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Consider a chest x-ray in acute overexposure. Gastric lavage with 5% sodium bicarbonate may be helpful.

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Notify safety personnel, isolate and ventilate area, deny entry, and stay upwind. Neutralize spills with crushed limestone, soda ash, lime, or sodium bicarbonate. After neutralizing, take up small spills with earth, sand, vermiculite, or other absorbent, noncombustible material and place in suitable containers for disposal; flush large spills to containment area and reclaim (if possible) or await disposal. Follow applicable OSHA regulations (29 CPR 1910.120).

Waste management / Disposal: Neutralize to between 5.5 & 8.5 before disposal. Contact your supplier or a licensed contractor for detailed recommendations. Pollow applicable Federal, state, and local regulations.

OSHA Designations Listed as an Air Contaminant (29 CFR 1910.1000, Table Z-1-A)

EPA Designations Listed as a RCRA Hazardous Waste (40 CFR 251.23, 0.01N solution or higher): No. D002, Characteristic of corrosivity

Listed as a CERCLA Hazardous Substance* (40 CFR 302.4): Final Reportable Quantity (RQ), 5000 lb (2270 kg) (* per CWA, Sec. 311 (b)(4)) SARA Extremely Hazardous Substance (40 CFR 355), TPQ: Not listed Listed as a SARA Toxic Chemical (40 CFR 372.65)

<u>Environmental Transport</u>: In soil, HCl will infiltrate moving faster in the presence of moisture. It may dissolve some soil matter, particularly those of a carbonate base will be neutralized to some degree and will be transported to groundwater.

Ecotoxicity Values: Chronic plant toxicity = 100 ppm; injurious to irrigatable
crops at 350 mg/L; trout, LC100, 10 mg/L/24 hr shrimp, LC50, 100 to 330
ppm/starfish, LC50, 100 to 330 mg/L/48 hr; shore crab, LC50, 240 mg/L/48 hr.

Page 4 ---

MSDS H-180 continues on page 5

Red Bird Service 205 Western Ave. Osgood, IN 47037 Phone 800-428-3502 OR FOR EMERGENCY, Call Chemtrec 24-hours a day...800-424-9300

Product: HYDROCHLORIC ACID

0.500 NORMAL

Internal ID: H-180

MSDS No: RBS / H-180 Revision: 4

Date: September 8, 1993

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Wear chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Because contact lens use in industry is controversial, establish your own policy.

Respirator: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. For < 50 ppm, use a cartridge respirator with acid gas cartridges, or any supplied-air respirator (SAR) or SCBA. For < 100 ppm, use any chemical cartridge respirator with a full facepiece and cartridge that protects against HCl inhalation, or any SAR or SCBA with a full facepiece.*

Other: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent skin contact. Polycarbonate, butyl rubber, polyvinyl chloride, and chlorinated polyethylene are recommended materials for PPE. Polyvinyl alcohol is not recommended.

Workplace considerations:

Ventilation: Provide general and local exhaust ventilation systems to maintain airborne concentrations below the OSHA PEL (Sec. 2). Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source.(103)

Safety stations:

Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.

Contaminated equipment:

Separate contaminated work clothes from street clothes. Launder contaminated work clothing before wearing. Remove this material from your shoes and clean personal protective equipment.

Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilst, or applying cosmetics.

* Warning: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Prevent physical damage to containers. Store in a cool, dry, well-ventilated area on a cement floor away from direct sunlight and heat sources. Use decanting pumps or pouring frames to minimize spillage during loading and unloading operations.

Engineering controls: To reduce potential health hazards, use sufficient dilution or local exhaust ventilation to control airborne contaminants and to maintain concentrations at the lowest practical level. HCl should be manufactured in closed systems. Pay close attention to leak detection. Aqueous scrubbers are used to control

SPECIAL PRECAUTIONS continues on page 6

Red Bird Service 205 Western Ave. Osgood, IN 47037 Phone 800-428-3502 OR FOR EMERGENCY Call Chemtrec 24-hours a day...800-424-9300 Product: HYDROCHLORIC ACID 0.500 NORMAL

Internal ID: H-180

MSDS No: RBS / H-180 Revision: 4

ΤO

Date: September 8, 1993

SPECIAL PRECAUTIONS continued from page 5

hydrogen chloride emissions from vent stacks and other sources. Workers shouldn't enter tanks previously containing RC1 until they have been cleaned.

Other precautions: <u>Administrative Controls</u>: Consider preplacement and periodic medical exams of exposed workers with emphasis on the eyes, skin, and respiratory tract. Pulmonary function tests (FEV, FVC) are useful in determining lung disorders. Conduct difficult operations in fume hoods.

DOT Class: Not Regulated
Data source code(s): 26, 73, 89, 100, 101, 103, 124, 126, 127, 132, 133, 136, 139,
148, 149, 153, 159, 162, 163, 164, 167, 168, 171, 174, CFR,
RBS(rev.)

Prepared/revised by: Gene C. Feith

September 8, 1993

Judgements as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Red Bird Service extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or the consequences of its use for the consequences of its use.

Page 6 ---

End of MSDS H-180

--- Page 6

TOTAL P.13

Vendor:

Remit:

170520 CYCLONAIRE PNEUMATIC BULK

SAME

CONVEYING COMPANY

P. O. BOX 39 YORK, NE 68467

Terms:

NET ON RECEIPT

Contact: JERRY ELFRING

Phone:

402-362-2000

Messages: LOCATION: 2922 N. DIVISION ST.

FED.EX.#: 1051-1752-3

YORK, NE 68467

Material Safety Data Sheet for Calcium Carbonate

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Substance:

Calcium Carbonate, Calcite, CaCO₃, Ground Limestone, Ash Grove Grid Athletic Field Marker, Mineral Filler, Lime Rock

Carbonate; weak inorganic base

Chemical Family: Molecular Formula:

CaCO₃

Revision Date: September, 1995

Section II - Hazardous Ingredients/Identity Information

	.			
	CAS#	<u>%</u>	OSHA PEL	1994-95 TLY
Calcium Carbonate (CaCO ₃)	471-34-1	>1%	15 mg/m³ total dust 5 mg/m³ respirable dust	10 mg/m³**
Silica (quartz)	14808-60-7	>0.1%	10 mg/m ³ % Silica* + 2	0.1 mg/m ³ *

^{*} Respirable fraction

Section III - Physical/Chemical Characteristics

Boiling Point: NA*

Specific Gravity: 2.710

Vapor Pressure(mm Hg): 0

Melting Point: Decomposes 900°C

Vapor Density: (Air=1) NA

Evaporation Rate: NA

Solubility in Water: 0.0014% (25°C)

Appearance and Odor: White powder or granules; no odor

*NA = Not applicable, solid material

^{**} For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain silica as an impurity.

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA

Flammable or Explosive Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firelighting Media: NA

Unusual Fire and Explosion Hazards: None

*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Chronic exposure to silica above accepted exposure limits can lead to silicosis.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing lung diseases such as emphysema or tuberculosis may be aggravated by exposure.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the National Toxicology Program (NTP) and the International Agency for Research in Cancer (IARC) have determined, primarily through animal studies, that silica has the potential to cause cancer. OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling:

Avoid generation of excessive dust.

Storing:

Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respirator: In dusty environments, the use of a MSHA/NIOSH approved respirator for particulates is recommended.

Firefighting:

NA

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet for Calcium Hydroxide

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company.

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: Information Telephone Number: (913) 451-8900

(913) 451-8900

Chemical Name and Synonyms:

Calcium hydroxide, calcium dihydroxide, Ca(OH)₂, slaked lime, hydrated lime, lime, milk of lime, carboxide, caustic lime

Trade Name and Synonyms:

Snowflake, Kemilime, Slik

CAS No. 001-305-620

Date Reviewed: September, 1995

Section U - Hazardous Ingredients

	CAS#	<u>%</u>	OSHA PEL	1994-95 TLV
Calcium Hydroxide [Ca(OH) ₂]	001-305-620	>1%	15 mg/m³ total dust 5 mg/m³ respirable dust	5 mg/m ³
Silica (quartz)	14808-60-7	>0.1%	10 mg/m ³ . % Silica* + 2	0.1 mg/m ³ *

Respirable fraction

Section II - Hazardous Ingredients

Chemical Family:

Inorganic Base

Molecular Weight:

74.10

Boiling Point: Melting Point: Decomposes to calcium oxide above 580°C (-H₂O) at 580°C; converts to calcium oxide

Vapor Pressure (mm Hg): N/A Specific Gravity:

Vapor Density:

2.24

Solubility in Water:

(Air=1)0Evaporation Rate: N/A

0.185 g/100 ml at 0°C

0.077 g/100 ml at 100°C

Appearance and Odor:

Soft white powder; odorless

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: NA; UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or

fog.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Calcium hydroxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

Route(s) of Entry: Inhalation; skin; eyes; ingestion

- 1. Inhalation: corrosive
 - Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - Chronic exposure: Bronchiał irritation with chronic cough are common. b.
 - First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- 2. Skin contact: corrosive
 - Acute exposure: Lime in contact with unprotected skin can produce severe burns. Because of the solubility of lime, further penetration is possible and it may continue for several days. The extent of damage depends on duration of contact.

Section V - Health Hazard Data - (Continued)

- b. Chronic exposure: A chronic dermatitis may follow repeated contact.
- c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
 - Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
 - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium hydroxide listed as an OSHA carcinogen: NO By NTP: YES By IARC: NO

Quartz listed as an OSHA carcinogen: NO By NTP: YES By IARC: YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.49, with water at temperatures of 25°C or above.

Hazardous Decomposition or By-Products: When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling:

Use protective equipment as described in Section VIII.

Storing:

Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: A NIOSH-MSHA approved respirator with dust filtering capability for protection against airborne calcium hydroxide

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Steps to be taken in case material is Released or Spilled: Pick up spilled powder. Avoid contact and dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet for Calcium Oxide

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Calcium oxide, CaO, quicklime, lime, unslaked lime

Trade Name and Synonyms:

Pebble Quicklime, Cal-Max

CAS No. 1305-78-8

Date Revised: August, 1995

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Quicklime, CaO	1305-78-8	5 mg/m³	2 mg/m³
Quartz, free silica	14808-60-7	PEL = <u>10mg/m³</u> % SiO ₂ *+2	0.1 mg/m³

Calcium oxide may contain 0.4% to 3% quartz, free silica. Chronic exposure to the respirable dust of materials containing quartz; e.g., sand and gravel, has caused silicosis.

*Respirable fraction

ACGIH

American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL

Permissible Exposure Limit

TLV

Threshold Limit Value

Section III - Chemical and Physical Data

Chemical Family:

Inorganic Base

Evaporation Rate: N/A

Molecular Weight:

56.10

Boiling Point:

5162°C

Melting Point:

4737°F.

Specific Gravity:

3.2-3.4

Vapor Density:

(Air=1) N/A

Solubility in Water:

0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C

Appearance and Odor: White granular or powder; faint earthy odor

Section IV - Fire and Explosion Hazard Data

Flash Point: NA; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: NA LEL: NA UEL: NA

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

- 1. Inhalation: corrosive
 - a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
 - b. Chronic exposure: Bronchial irritation with chronic cough are common.
 - c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- 2. Skin contact: corrosive
 - a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. Chronic exposure: A chronic dermatitis may follow repeated contact.
 - c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
 - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
 - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
 - First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes).
 Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Quartz listed as an OSHA carcinogen: NO By NTP: YES By IARC: YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25 °C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use NIOSH-MSHA approved respirator with dust filtering capability for protection against airborne particles.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Material Safety Data Sheet for AB3 Limestone

Section I - Identity

Manufacturer's name and address:

Shamrock Aggregates

23004 E. 24 Highway

Independence, MO 64050

Emergency Telephone Number:

(816) 792-1628

Information Telephone Number:

(816) 329-8993

Substance:

AB3 Limestone, Calcium Carbonate, Calcite, CaCO3, Limestone, Lime Rock, Road Rock

Chemical Family: Carbonate, weak inorganic base

Molecular Formula: CaC03

Revision Date: September, 1995

Section II - Hazardous Ingredients

	CAS#	<u>%</u>	OSHA PEL	1994-95 TLV
Calcium Carbonate (CaCO ₃)	471-34-1	>1%	15 mg/m³ total dust 5 mg/m³ respirable dust	10 mg/m³**
Silica (quartz)	14808-60-7	>0.1%	10 mg/m ³ % Silica* + 2	0.1 mg/m ³ *

- * Respirable fraction
- ** For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain silica as an impurity.

Section III - Physical/Chemical Characteristics

Boiling Point: NA*

Specific Gravity: 2.710

Vapor Pressure(mmHg): 0

Melting Point: Decomposes 900°C.

Vapor Density: (Air=1) NA

Evaporation Rate: 0 (1652°F)

Solubility in Water: 0.0014% (25°C)

Appearance and Odor: White powder or granules; No odor

*NA = not applicable, solid material

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA

Flammable Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Chronic exposure to silica above accepted exposure limits can lead to silicosis.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing lung diseases such as emphysema or tuberculosis may be aggravated by exposure.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the National Toxicology Program (NTP) and the International Agency for Research in Cancer (IARC) have determined, primarily through animal studies, that silica has the potential to cause cancer. OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Emergency measures not generally indicated.

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulate.

Respirator: In dusty environments, the use of a MSHA/NIOSH approved respirator with dust filtering capability is recommended.

Firefighting: NA

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

Concentrate Chemicals

MSDS: 3M Brand SANITIZER (Ready-to-Use) MATERIAL SAFETY DATA SHEET 3M Center April 10, 1995 St. Paul, Minnesota 3. FIRE AND EXPLOSION HAZARD DATA (continued) (612) 733-1110 DIVISION: HOME AND COMMERCIAL CARE DIVISION TRADE NAME: SPECIAL FIRE FIGHTING PROCEDURES: 3M Brand SANITIZER (Ready-to-Use) Not applicable ISSUED: April 10, 1995 SUPERSEDES: April 04, 1995 UNUSUAL FIRE AND EXPLOSION HAZARDS: Not applicable. DOCUMENT: 06-6876-4 NFPA HAZARD CODES: HEALTH: 0 FIRE: 0 REACTIVITY: 0 UNUSUAL REACTION HAZARD: none INGREDIENT C.A.S. NO. OSHA FIRE HAZARD CLASS: Not applicable > 99 7732-18-5 < 0.1 4. REACTIVITY DATA IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT. STABILITY: Stable INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID: 2. PHYSICAL DATA Not applicable. HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur. BOILING POINT: 212 F HAZARDOUS DECOMPOSITION PRODUCTS: Not applicable. 5. ENVIRONMENTAL INFORMATION SPILL RESPONSE: Observe precautions from other sections. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container. APPEARANCE AND ODOR: RECOMMENDED DISPOSAL: Liquid, clear; essentially colorless. Discharge spent solutions and small quantities (less than 5 gal. (19 ${\tt L})\,\,{\scriptsize \rangle}\,$ to a wastewater treatment system. Dispose of empty cans in a sanitary landfill. 3. FIRE AND EXPLOSION HAZARD DATA ENVIRONMENTAL DATA: A 3M Product Environmental Data Sheet (PED) is available. FLASH POINT:..... N/A REGULATORY INFORMATION:

FLAMMABLE LIMITS - LEL:..... N/A
FLAMMABLE LIMITS - UEL:..... N/A AUTOIGNITION TEMPERATURE:..... N/A Non-combustible. Choose material suitable for surrounding fire.

Abbreviations: N/D - Not Determined N/A - Not Applicable

EPCRA HAZARD CLASS: FIRE HAZARD: NO PRESSURE: NO REACTIVITY: NO ACUTE: NO CHRONIC: NO

Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER CONCENTRATE September 15, 1995

PAGE 3

5. ENVIRONMENTAL INFORMATION (continued)

Empty containers may be sanitary landfilled.

ENVIRONMENTAL DATA: Not determined.

Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S.

TSCA: All components used in the manufacture of this material are in compliance with the US TSCA inventory.

FIRE HAZARD: Yes PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

EYE CONTACT:

Immediately flush eyes with large amounts of water. Get immediate medical attention.

Flush skin with large amounts of water. If irritation persists, get

medical attention.

If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:

If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION: Avoid eye contact.

> ** When used as directed and diluted and dispensed with a TWIST ${}^{\mathsf{I}} N$ FILL (tm) Chemical Dispenser, eye contact with the concentrate is not expected to occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER CONCENTRATE September 15, 1995

7. PRECAUTIONARY INFORMATION (continued)

SKIN PROTECTION:

EPA Hazardous).

Avoid prolonged or repeated skin contact.

* When used as directed and diluted and dispensed with a TWIST 'N FTLL (tm) Chemical Dispenser, skin contact with the concentrate is not expected to occur.

RECOMMENDED VENTILATION:

Use in a well-ventilated area. Use with adequate dilution ventilation.

 $\star\star$ When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, special ventilation is not required.

RESPIRATORY PROTECTION:

Avoid prolonged breathing of vapors. Avoid prolonged breathing of spray or mists.

** When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, respiratory protection is not required.

PREVENTION OF ACCIDENTAL INGESTION: Do not ingest.

RECOMMENDED STORAGE:

Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:

Keep container tightly closed. Keep away from heat, sparks, open flame, and other sources of ignition. Combustible liquid and vapor.

OTHER PRECAUTIONARY INFORMATION: Not intended for consumer sale or use.

This product is not intended to be used without prior dilution as specified on the label.

EXPOSURE LIMITS

INGREDIENT		UNIT	TYPE		
WATER	NONE	NONE	NONE	NONE	
1-PROPOXY-2-PROPANOL	NONE	NONE	NONE	NONE	
STYRENE MALEIC ANHYDRIDE RESIN AMMONIUM SALT	NONE	NONE	NONE	NONE	
Fluoroaliphatic acid salt (N.J. trade secret registry 04499600-					
5170P)	NONE	NONE	NONE	NONE	

Abbreviations: N/D - Not Determined N/A - Not Applicable

PAGE 4

PAGE 2

Abbreviations: N/D - Not Determined N/A - Not Applicable

Abbreviations: N/D - Not Determined N/A - Not Applicable

INGREDIENTS

SECTION CHANGED SINCE February 13, 1995 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

PAGE 6

PAGE 4

AUTH SKIN*

NONE

NONE

NONE

NONE

NONE

NONE

Appendix33-001398

PAGE 3 November 15, 1994 PAGE 4 November 15, 1994 5. ENVIRONMENTAL INFORMATION (continued) 7. PRECAUTIONARY INFORMATION (continued) REGULATORY INFORMATION: FIRE AND EXPLOSION AVOIDANCE: Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number - None (Not U.S. Not applicable. EPA Hazardous). EXPOSURE LIMITS EPCRA HAZARD CLASS: AUTH SKIN* FIRE HAZARD: NO PRESSURE: NO REACTIVITY: NO ACUTE: NO CHRONIC: No INGREDIENT VALUE UNIT TYPE WATER NONE NONE NONE NONE POLYALKOXY ALCOHOLS..... NONE NONE 6. SUGGESTED FIRST AID NONE NONE NONE FRAGRANCE..... NONE NONE NONE EMULSIFIER..... NONE NONE NONE EYE CONTACT: * SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to Immediately flush eyes with large amounts of water. Get immediate the potential contribution to the overall exposure by the cutaneous route medical attention. including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption. SKIN CONTACT: Wash affected area with scap and water. SOURCE OF EXPOSURE LIMIT DATA: - NONE: None Established If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician. 8. HEALTH HAZARD DATA IF SWALLOWED: Do not induce vomiting. Drink two glasses of water. Call a physician. EYE CONTACT: Mild Eye Irritation: signs/symptoms can include redness, swelling, 7. PRECAUTIONARY INFORMATION pain, and tearing. SKIN CONTACT EYE PROTECTION: Contact with the skin during product use is not expected to result in Avoid eye contact. significant irritation. SKIN PROTECTION: Avoid prolonged or repeated skin contact. No adverse health effects are expected from inhalation exposure. RECOMMENDED VENTILATION: IF SWALLOWED: Ingestion is not a likely route of exposure to this product. Not applicable. RESPIRATORY PROTECTION: Avoid prolonged breathing of spray or mists. PREVENTION OF ACCIDENTAL INGESTION: Abbreviations: N/D - Not Determined N/A - Not Applicable Do not ingest. RECOMMENDED STORAGE: Keep container closed when not in use. Keep out of the reach of The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user. Abbreviations: N/D - Not Determined N/A - Not Applicable MSDS: 3M Brand DEODORIZER CONCENTRATE: FRESH SCENT MSDS: 3M Brand DEODORIZER CONCENTRATE: FRESH SCENT February 13, 1995 PAGE 4 February 13, 1995 (continued) (continued) 5. ENVIRONMENTAL INFORMATION 7. PRECAUTIONARY INFORMATION ENVIRONMENTAL DATA: RECOMMENDED VENTILATION: Use in a well-ventilated area. Not determined. REGULATORY INFORMATION: ** When used as directed, no special ventilation is required. Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. RESPIRATORY PROTECTION: Avoid breathing of vapors, mists or spray. TSCA: All components used in the manufacture of this material are in ** When used as directed, respiratory protection is not required. compliance with the US TSCA inventory. PREVENTION OF ACCIDENTAL INGESTION: EPCRA HAZARD CLASS: Wash hands after handling and before eating. FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: No RECOMMENDED STORAGE: Store away from heat. Keep container in well-ventilated area. 6. SUGGESTED FIRST AID -----FIRE AND EXPLOSION AVOIDANCE: Keep container tightly closed. EYE CONTACT: Immediately flush eyes with large amounts of water for at least 15 OTHER PRECAUTIONARY INFORMATION: ** NOTE: This material is intended to be diluted only with the 3M Twist 'N Fill Chemical Dispenser. minutes. Get immediate medical attention. SKIN CONTACT: Flush skin with large amounts of water. If irritation persists, get EXPOSURE LIMITS medical attention. INGREDIENT VALUE UNIT TYPE AUTH SKIN* INHALATION: If signs/symptoms occur, remove person to fresh air. If POLYALKOXY ALCOHOLS..... NONE NONE NONE signs/symptoms continue, call a physician. NONE NONE FRAGRANCE..... NONE NONE NONE NONE NONE NONE Do not induce vomiting. Drink two glasses of water. Call a physician. EMULSIFIER..... NONE NONE NONE NONE _____ * SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to 7. PRECAUTIONARY INFORMATION the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption. EYE PROTECTION: Avoid eye contact. Wear vented goggles. SOURCE OF EXPOSURE LIMIT DATA: - NONE: None Established ** When used as directed, eye contact with this material is not expected to occur. 8. HEALTH HAZARD DATA SKIN PROTECTION: Avoid skin contact. EYE CONTACT: ** When used as directed, skin contact with this material is not Moderate Eye Irritation: signs/symptoms can include redness, swelling, expected to occur. pain, tearing, and hazy vision. Abbreviations: N/D - Not Determined N/A - Not Applicable Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER (Ready-to-Use): FRESH SCENT

MSDS: 3M Brand DEODORIZER (Ready-to-Use): FRESH SCENT

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

```
3M ID NUMBER/U.P.C.:
70.0706-3515-9 00-48011-20120-2
ISSUED: February 13, 1995
SUPERSEDES: November 15, 1994
DOCUMENT: 06-8476-1

    INGREDIENT

                                                                             PERCENT
POLYALKOXY ALCOHOLS.....
                                                      69013-18-9
                                                                                  - 60
- 30
- 30
FRAGRANCE....
WATER
EMULSIFIER...
                                                      7732-18-5
9005-64-5
                                                                        10
10
                                                     107-98-2
1-METHOXY-2-PROPANOL.....
  IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.
  2. PHYSICAL DATA

        BOILING POINT:
        ca. 212 F

        VAPOR PRESSURE:
        N/D

        VAPOR DENSITY:
        N/D

        EVAPORATION RATE:
        N/D

MELTING POINT:..... N/A
APPEARANCE AND ODOR:
  Liquid, clear; dark green color; strong spicy fragrance
  3. FIRE AND EXPLOSION HAZARD DATA

        FLASH POINT:
        > 21

        FLAMMABLE LIMITS - LEL:
        N/D

        FLAMMABLE LIMITS - UEL:
        N/D

                           ..... > 212 F TCC
AUTOIGNITION TEMPERATURE:.... N/D
```

Abbreviations: N/D - Not Determined N/A - Not Applicable

MATERIAL SAFETY

DATA SHEET

3M Center

DIVISION: HOME AND COMMERCIAL CARE DIVISION TRADE NAME:

3M Brand DEODORIZER CONCENTRATE: MOUNTAIN SPICE

St. Paul, Minnesota 55144-1000

(612) 733-1110

```
MSDS: 3M Brand DEODORIZER CONCENTRATE: MOUNTAIN SPICE
                                                                                              PAGE 2
February 13, 1995
 3. FIRE AND EXPLOSION HAZARD DATA (continued)
EXTINGUISHING MEDIA:
   Water, Carbon dioxide, Dry chemical, Foam
SPECIAL FIRE FIGHTING PROCEDURES:
   Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and
  protective covering for exposed areas of the head.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
   No unusual fire or explosion hazards are anticipated.
NFPA HAZARD CODES: HEALTH: 1 FIRE: 1 REACTIVITY: 0
                           UNUSUAL REACTION HAZARD:
OSHA FIRE HAZARD CLASS: Not applicable
    4. REACTIVITY DATA
INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
   Strong Oxidizing Agents.
HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.
HAZARDOUS DECOMPOSITION PRODUCTS:
   Carbon Monoxide and Carbon Dioxide, Irritant Vapors or Gases.
  5. ENVIRONMENTAL INFORMATION
SPILL RESPONSE:
   Refer to other sections of this MSDS for information regarding
   physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container.
 RECOMMENDED DISPOSAL:
   SMALL quantities (less than 5 gal.(19 L)) may be discharged to a wastewater treatment system. Incinerate in a permitted hazardous waste incinerator. Dispose of completely absorbed waste product in a
   hazardous waste facility.
```

Abbreviations: N/D - Not Determined N/A - Not Applicable

MATERIAL SAFETY 3M Center DATA SHEET St. Paul, Minnesota 55144-1000 (612) 733-1110 DIVISION: HOME AND COMMERCIAL CARE DIVISION 3M Brand DEODORIZER (Ready-to-Use): COUNTRY GARDEN ISSUED: June 21, 1995 SUPERSEDES: November 15, 1994 DOCUMENT: 06-8480-3 PERCENT 1. INGREDIENT C.A.S. NO.

 WATER
 7732-18-5

 POLYALKOXY ALCOHOLS
 69013-18-9

 FRAGRANCE
 Unknown

 EMULSIFIER
 9005-64-5

 > 95 < 1 IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT. 2. PHYSICAL DATA VOC LESS H2O & EXEMPT SOLVENTS: < 1 %

 pH:
 ca. 7

 VISCOSITY:
 < 100 centipoise</td>

 MELTING POINT:
 N/A

 APPEARANCE AND ODOR: Liquid, clear; red color; light floral fragrance. 3. FIRE AND EXPLOSION HAZARD DATA FLASH POINT: ... N/A
FLAMMABLE LIMITS - LEL: ... N/A
FLAMMABLE LIMITS - UEL: ... N/A
AUTOIGNITION TEMPERATURE: ... N/A Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER (Ready-to-Use): COUNTRY GARDEN PAGE 2 June 21, 1995 3. FIRE AND EXPLOSION HAZARD DATA (continued) EXTINGUISHING MEDIA:
Non-combustible. Choose material suitable for surrounding fire. SPECIAL FIRE FIGHTING PROCEDURES: Not applicable UNUSUAL FIRE AND EXPLOSION HAZARDS: Not applicable. NFPA HAZARD CODES: HEALTH: 0 FIRE: 0 REACTIVITY: 0 UNUSUAL REACTION HAZARD: none OSHA FIRE HAZARD CLASS: Not applicable ______ 4. REACTIVITY DATA STABILITY: Stable Not applicable. HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur. HAZARDOUS DECOMPOSITION PRODUCTS: Not applicable. 5. ENVIRONMENTAL INFORMATION ______ Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Collect spilled material. Clean up residue. RECOMMENDED DISPOSAL: Flush spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Dispose of waste product in a sanitary landfill. ENVIRONMENTAL DATA: Not determined. Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER CONCENTRATE: MOUNTAIN SPICE

February 13, 1995

PAGE 5

8. HEALTH HAZARD DATA

Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

SKIN CONTACT:

Lung Inflammation: Product contains surfactants which have been shown in animal studies to cause lung inflammation resulting from prolonged skin contact. Signs/symptoms can include coughing and shortness of

Moderate Skin Irritation: signs/symptoms can include redness, swelling, itching, and dryness.

May be absorbed through the skin in harmful amounts.

INHALATION:

Single overexposure, above recommended guidelines, may cause:

Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

Ingestion is not a likely route of exposure to this product.

Ingestion may cause:

Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

.....

SECTION CHANGE DATES

SECTION CHANGED SINCE November 15, 1994 ISSUE HEADING

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:

MATERIAL SAFETY DATA SHEET

3M Center St. Paul, Minnesota 55144-1000

(612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION

TRADE NAME:
3M Brand BONNET CLEANER (Ready-to-Use) 3M ID NUMBER:

ISSUED: November 15, 1994 SUPERSEDES: INITIAL ISSUE DOCUMENT: 06-8483-7

1. INGREDIENT C.A.S. NO. PERCENT WATER 7732-18-5 > 95 1-PROPOXY-2-PROPANOL,.... 1569-01-3 < 1

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

2. PHYSICAL DATA

BOILING POINT:..... ca. 212 F SOLUBILITY IN WATER: ... complete
SPECIFIC GRAVITY: ... ca. 1 Water=1
PERCENT VOLATILE: ... > 99 %
VOLATILE ORGANIC COMPOUNDS: ... < 10 gms/liter
VOC LESS H20 & EXEMPT SOLVENTS: < 10 gms/liter pH:..... ca. 8 viscosity:.... < 100 centipoise

APPEARANCE AND ODOR: Liquid, colorless; pleasant fragrance

3. FIRE AND EXPLOSION HAZARD DATA

EXTINGUISHING MEDIA:

Water, Carbon dioxide, Dry powder, Foam

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER (Ready-to-Use) November 15, 1994

3. FIRE AND EXPLOSION HAZARD DATA (continued)

PAGE 2

PAGE 4

SPECIAL FIRE FIGHTING PROCEDURES: Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS: Not applicable.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 1 REACTIVITY: 0 UNUSUAL REACTION HAZARD: none

OSHA FIRE HAZARD CLASS: Not applicable

4. REACTIVITY DATA

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID: Strong Oxidizing Agents.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide and Carbon Dioxide.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:

Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Contain spill. Flush area thoroughly with water as necessary to dilute or clean up residue. Collect spilled material. Clean up residue with water.

RECOMMENDED DISPOSAL:
Small quantities (less than 5 gal.(19 L)) may be discharged to a wastewater treatment system.

ENVIRONMENTAL DATA: Not determined.

REGULATORY INFORMATION:

Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous).

EPCRA HAZARD CLASS:

PAGE 3

Abbreviations: N/D - Not Determined N/A - Not Applicable

_____.

MSDS: 3M Brand NON-ACID BATHROOM CLEANER CONCENTRATE June 20, 1995

5. ENVIRONMENTAL INFORMATION (continued)

REGULATORY INFORMATION: Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number - None (Not U.S. EPA Hazardous).

TSCA: All components used in the manufacture of this material are in compliance with the US TSCA inventory.

EPCRA HAZARD CLASS:

FIRE HAZARD: NO PRESSURE: NO REACTIVITY: NO ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

SKIN CONTACT:

Flush skin with large amounts of water. If irritation persists, get medical attention.

INHALATION:

If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

Do not induce vomiting. Drink two glasses of water. Call a physician.

_____ 7. PRECAUTIONARY INFORMATION

EYE PROTECTION:

Avoid eve contact. Avoid eye contact with vapor, spray, or mist. Wear safety glasses with side shields.

** When used as directed, eye contact with this material is not expected to occur.

SKIN PROTECTION:

Avoid prolonged or repeated skin contact. Wear appropriate gloves when handling this material. A pair of gloves made from the following material(s) are recommended: butyl rubber, neoprene,

** When used as directed, skin contact with this material is not expected to occur.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand NON-ACID BATHROOM CLEANER CONCENTRATE June 20, 1995

7. PRECAUTIONARY INFORMATION NFORMATION (continued)

Use in a well-ventilated area. Use with adequate dilution

** When used as directed, no special ventilation is required. RESPIRATORY PROTECTION:

Avoid breathing of vapors, mists or spray.

** When used as directed, respiratory protection is not required.

Wash hands after handling and before eating. Do not ingest.

PREVENTION OF ACCIDENTAL INGESTION:

RECOMMENDED VENTILATION:

RECOMMENDED STORAGE: Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:

Keep container tightly closed.

OTHER PRECAUTIONARY INFORMATION:

** This material is intended to be diluted only with the 3M Twist 'N Fill Chemical Dispenser.

EXPOSURE LIMITS

INGREDIENT VALUE UNIT TYPE AUTH SKIN* WATER.....CARBOXYIMIDAZOLINIUM SALT..... NONE NONE NONE NONE NONE NONE NONE NONE FRAGRANCE..... NONE NONE NONE NONE

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA: - NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:

Severe Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, cloudy appearance of the cornea, impaired vision and possible permanently impaired vision.

Abbreviations: N/D - Not Determined N/A - Not Applicable

```
3. FIRE AND EXPLOSION HAZARD DATA (continued)
             HOME AND COMMERCIAL CARE DIVISION
                                                                                                              EXTINGUISHING MEDIA:
Non-combustible. Choose material suitable for surrounding fire.
TRADE NAME:
  3M Brand SANITIZER CONCENTRATE
3M ID NUMBER/U.P.C.:
70-0705-8178-3 00-48011-19869-4 70-0706-3507-6 00-48011-20112-7
70-0706-3508-4 00-48011-20113-4
ISSUED: September 13, 1995
SUPERSEDES: August 31, 1995
                                                                                                              SPECIAL FIRE FIGHTING PROCEDURES:
                                                                                                                Not applicable
                                                                                                              UNUSUAL FIRE AND EXPLOSION HAZARDS:
                                                                                                                Not applicable.
DOCUMENT: 06-6875-6
                                                                                                                                       HEALTH: 2 FIRE: 0 REACTIVITY: 0 UNUSUAL REACTION HAZARD: corrosive
                                                                                                              NFPA HAZARD CODES:
                                                                            PERCENT
  1. INGREDIENT
                                                                                                              OSHA FIRE HAZARD CLASS: Not applicable
2.3
                                                                                                                4. REACTIVITY DATA
   IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24
   HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.
                                                                                                              STABILITY: Stable
                                                                                                              INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
  2. PHYSICAL DATA
                                                                                                                Not applicable.
                                                                                                              HAZARDOUS POLYMERIZATION; Hazardous polymerization will not occur.

        BOILING POINT:
        Ca. 212 F

        VAPOR PRESSURE:
        N/D

                                                                                                              HAZARDOUS DECOMPOSITION PRODUCTS:
VAPOR DENSITY: N/D
EVAPORATION RATE: Ca. 1 Water=1
SOLUBILITY IN WATER: Complete
SPECIFIC GRAVITY: Ca. 1.0 Water=1
PERCENT VOLATILE: Ca. 95 %
VOLATILE ORGANIC COMPOUNDS: < 1 %
                                                                                                                 Carbon Monoxide and Carbon Dioxide, Oxides of Nitrogen.
                                                                                                                5. ENVIRONMENTAL INFORMATION
SPILL RESPONSE:
                                                                                                                 Refer to other sections of this MSDS for information regarding
                                                                                                                physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Ventilate area. Cover with inorganic absorbent material. Collect spilled material. Clean up residue with water. Place in a polyethylene-lined metal container. Seal the container.
APPEARANCE AND ODOR:
   Liquid, clear, colorless to light amber color; mild odor.
  3. FIRE AND EXPLOSION HAZARD DATA
                                                                                                              RECOMMENDED DISPOSAL:
                                                                                                                 Incinerate in a permitted hazardous waste incinerator in the presence
                                                                                                                 of a combustible material. Combustion products will include HCl.
FLASH POINT: .
FLAMMABLE LIMITS - LEL: N/A
FLAMMABLE LIMITS - UEL: N/A
AUTOIGNITION TEMPERATURE: N/D
                                                                                                              ENVIRONMENTAL DATA:
                                                                                                                 A 3M Product Environmental Data Sheet (PED) is available.
                                                                                                              Abbreviations: N/D - Not Determined N/A - Not Applicable
 Abbreviations: N/D - Not Determined N/A - Not Applicable
```

MSDS: 3M Brand SANITIZER CONCENTRATE

September 13, 1995

MATERIAL SAFETY

3M Center

55144-1000 (612) 733-1110

St. Paul, Minnesota

DATA SHEET

PAGE 2

7. PRECAUTIONARY INFORMATION (continued) specified on the label. EXPOSURE LIMITS INGREDIENT VALUE UNIT TYPE AUTH SKIN* WATER... NONE NONE NONE NONE

DIDECYLDIMETHYLAMMONIUM CHLORIDE.... NONE NONE NONE NONE ALKYLDIMETHYLBENZYL AMMONIUM CHLORIDE NONE NONE NONE NONE

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA: NONE: None Established

MSDS: 3M Brand SANITIZER CONCENTRATE

September 13, 1995

8. HEALTH HAZARD DATA

EYE CONTACT:

Chemical Related Bye Burns (chemical corrosivity): signs/symptoms can include cloudy appearance of the cornea, chemical burns, pain, tearing, ulcers, impaired vision or loss of vision.

Allergic Skin Reaction: signs/symptoms can include redness, swelling, blistering, and itching.

Skin Burns (chemical corrosivity): signs/symptoms can include redness, swelling, itching, pain, blistering, ulceration, sloughing, and scar formation.

May be absorbed through the skin and produce effects similiar to those caused by inhalation and/or ingestion.

INHALATION:

Single overexposure, above recommended guidelines, may cause:

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:

Ingestion is not a likely route of exposure to this product.

Harmful or fatal if swallowed.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand SANITIZER CONCENTRATE September 13, 1995

PAGE 6

8. HEALTH HAZARD DATA (continued)

Trritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

OTHER HEALTH HAZARD INFORMATION:
HMIS: HEALTH=3 /FLAMMABILITY=0 /REACTIVITY=0 / PERSONAL PROTECTION=D

SECTION CHANGE DATES

PAGE 5

ENVIRONMENTAL INFO. SECTION CHANGED SINCE August 31, 1995 - HEALTH HAZARD DATA SECTION CHANGED SINCE August 31, 1995 ISSUE ISSUE

Abbreviations: $\ensuremath{\text{N/D}}$ - $\ensuremath{\text{Not}}$ Determined $\ensuremath{\text{N/A}}$ - $\ensuremath{\text{Not}}$ Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

3M

Twist 'n Fill™ Cleaning Chemical Management System

Material Safety Data Sheets

5. ENVIRONMENTAL INFORMATION (continued)

REGULATORY INFORMATION:

Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = D002 (Corrosive)

TSCA: All components used in the manufacture of this material are in compliance with the US TSCA inventory.

EPCRA HAZARD CLASS:

FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes

6. SUGGESTED FIRST AID

EYE CONTACT:

Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

Immediately flush skin with large amounts of water for at least 15 minutes in a chemical safety shower while removing contaminated clothing and shoes. Get immediate medical attention. Wash contaminated clothing before reuse.

If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:

If swallowed, do NOT induce vomiting. Give victim two glasses of water. Call a physician immediately. Never give anything by mouth to an unconscious person.

Note to physician: Probable mucosal damage may contraindicate the use of gastric lavage.

OTHER FIRST AID INFORMATION:

Measures against circulatory shock, respiratory depression, and convulsion may be needed.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:

Avoid eye contact. The following should be worn alone or in combination, as appropriate, to prevent eye contact: Wear vented goggles. Wear full-face shield.

** When used as directed and diluted and dispensed with a TWIST 'N

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand SANITIZER CONCENTRATE September 13, 1995

7. PRECAUTIONARY INFORMATION (continued)

FILL (tm) Chemical Dispenser, eye contact with the concentrate is not expected to occur.

SKIN PROTECTION:

Avoid skin contact. Wear appropriate gloves when handling this material. A pair of gloves made from the following material(s) are recommended: butyl rubber, neoprene, nitrile rubber. Use one or more of the following personal protection items as necessary to prevent skin contact: apron, coveralls

 $\mbox{ **}$ When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, skin contact with the concentrate is not expected to occur.

RECOMMENDED VENTILATION:

Use in a well-ventilated area. Provide sufficient ventilation to maintain emissions below recommended exposure limits. If exhaust ventilation is not adequate, use appropriate respiratory protection.

** When used as directed and diluted and dispenses with a TWIST 'N FILL (tm) Chemical Dispenser, special ventilation is not required.

RESPIRATORY PROTECTION:

Avoid breathing of vapors, mists or spray. Avoid breathing of airborne material.

 $\star\star$ When used as directed and diluted and dispensed with a TWIST 'N FILL (tm) Chemical Dispenser, respiratory protection is not required.

PREVENTION OF ACCIDENTAL INGESTION:

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

Avoid contamination of food.

RECOMMENDED STORAGE:

Store away from areas where product may come into contact with food or pharmaceuticals. Do not store containers on their sides. Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE:

Keep container tightly closed. Keep away from heat, sparks, open flame, and other sources of ignition. Combustible liquid and vapor.

OTHER PRECAUTIONARY INFORMATION:

Not intended for consumer sale or use.

Avoid creasing or impacting container side walls.

This product is not intended to be used without prior dilution as Abbreviations: N/D - Not Determined N/A - Not Applicable

TABLE OF CONTENTS

READY-TO-USE CHEMICALS

3M Brand Bonnet Cleaner (Ready-to-Use)

3M Brand Deodorizer (Ready-To-Use): Country Garden

3M Brand Deodorizer (Ready-to-Use): Fresh Scent

3M Brand Deodorizer (Ready-to-Use): Mountain Spice

3M Brand Non-Acid Bathroom Cleaner (Ready-to-Use)

3M Brand Sanitizer (Ready-to-Use)

CONCENTRATE CHEMICALS

3M Brand Bonnet Cleaner Concentrate

3M Brand Deodorizer Concentrate: Country Garden

3M Brand Deodorizer Concentrate: Fresh Scent

3M Brand Deodorizer Concentrate: Mountain Spice 3M Brand Non-Acid Bathroom Cleaner Concentrate

3M Brand Sanitizer Concentrate

MSDS: 3M Brand NON-ACID BATHROOM CLEANER CONCENTRATE June 20, 1995	PAGE
8. HEALTH HAZARD DATA (continued)	
SKIN CONTACT: Moderate Skin Irritation: signs/symptoms can include redness, swelling, itching, and dryness.	
INHALATION: Single overexposure, above recommended guidelines, may cause:	
Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.	
IF SWALLOWED: Ingestion is not a likely route of exposure to this product.	
Illness may occur after a single swallowing of relatively large quantities of this material.	
Ingestion may cause:	
Gastrointestinal Effects: signs/symptoms generally will includable abdominal pain.	le
OTHER HEALTH HAZARD INFORMATION: HMIS: HEALTH=2 /FLAMMABILITY=1 /REACTIVITY=0 /PERSONAL PROTECTION=E	3
SECTION CHANGE DATES	
HEADING SECTION CHANGED SINCE May 30, 1995 ISSUE	
•	
Abbreviations: N/D - Not Determined N/A - Not Applicable	· • • • •
The information on this Data Sheet represents our current data and be opinion as to the proper use and handling of this product under norms conditions. Any use of the product which is not in conformance with Data Sheet or which involves using the product in combination with an other product or any other process is the responsibility of the user.	al this ny

Ready-to-Use Chemicals

MSDS: 3M Brand NON-ACID BATHROOM CLEANER CONCENTRATE MATERIAL SAFETY PAGE 2 DATA SHEET 3M Center June 20, 1995 St. Paul, Minnesota 55144-1000 3. FIRE AND EXPLOSION HAZARD DATA (continued) (612) 733-1110 DIVISION: HOME AND COMMERCIAL CARE DIVISION TRADE NAME: EXTINGUISHING MEDIA: Water, Carbon dioxide, Dry chemical, Foam 3M Brand NON-ACID BATHROOM CLEANER CONCENTRATE 3M ID NUMBER/U.P.C.: SPECIAL FIRE FIGHTING PROCEDURES:
Wear full protective clothing, including helmet, self-contained,
positive pressure or pressure demand breathing apparatus, bunker coat
and pants, bands around arms, waist and legs, face mask, and 70-0706-5317-8 -ISSUED: June 20, 1995 SUPERSEDES: May 30, 1995 DOCUMENT: 05-3153-3 - XN-1014-5736-6 protective covering for exposed areas of the head. 1. INGREDIENT UNUSUAL FIRE AND EXPLOSION HAZARDS: PERCENT No unusual fire or explosion hazards are anticipated. NFPA HAZARD CODES: HEALTH: 2 FIRE: 1 REACTIVITY: 0 UNUSUAL REACTION HAZARD: none WATER. 7732-18-5 - 90 CARBOXYIMIDAZOLINIUM SALT..... 13039-35-5 FRAGRANCE..... Unknown OSHA FIRE HAZARD CLASS: Not applicable IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS MATERIAL. 4. REACTIVITY DATA 2. PHYSICAL DATA STABILITY: Stable BOILING POINT: ca. 210 F
VAPOR PRESSURE: N/D INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID: Not applicable. VAPOR PRESSURE:

VAPOR DENSITY:

N/D

EVAPORATION RATE:

SOLUBILITY IN WATER:

SPECIFIC GRAVITY:

Ca. 1.1 Water=1

PERCENT VOLATILE:

CA. 70 *

VOLATILE ORGANIC COMPOUNDS:

CA. 5 *

VOC LESS H20 & EXEMPT SOLVENTS: N/D HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur. HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide and Carbon Dioxide. pH: 9 - 10 VISCOSITY: < 100 centipoise 5. ENVIRONMENTAL INFORMATION SPILL RESPONSE: Observe precautions from other sections. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container. APPEARANCE AND ODOR: Liquid, clear, green color, pleasant fragrance RECOMMENDED DISPOSAL: 3. FIRE AND EXPLOSION HAZARD DATA Incinerate in an industrial or commercial facility in the presence of a combustible material. FLASH POINT: FLAMMABLE LIMITS - LEL: N/A
FLAMMABLE LIMITS - UEL: N/A ENVIRONMENTAL DATA: Not determined. AUTOIGNITION TEMPERATURE: N/D Abbreviations: N/D - Not Determined N/A - Not Applicable Abbreviations: N/D - Not Determined N/A - Not Applicable MSDS: 3M Brand BONNET CLEANER (Ready-to-Use) MSDS: 3M Brand BONNET CLEANER (Ready-to-Use) November 15, 1994 PAGE 3 November 15, 1994 PAGE 4 7. PRECAUTIONARY INFORMATION (continued) 5. ENVIRONMENTAL INFORMATION (continued) FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: Yes EXPOSURE LIMITS INGREDIENT VALUE UNIT TYPE AUTH SKIN* 6. SUGGESTED FIRST AID WATER NONE 1-PROPOXY-2-PROPANOL.... NONE NONE NONE NONE EYE CONTACT: Immediately flush eyes with large amounts of water. Get immediate * SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption. medical attention. Flush skin with large amounts of water. If irritation persists, get medical attention. SOURCE OF EXPOSURE LIMIT DATA: NONE: None Established If signs/symptoms occur, remove person to fresh air. If

signs/symptoms continue, call a physician.

IF SWALLOWED:

Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:

Avoid eye contact. Avoid eye contact with vapor, spray, or mist.

SKIN PROTECTION:

Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:

Use in a well-ventilated area. Use with adequate dilution ventilation.

RESPIRATORY PROTECTION:

Avoid prolonged breathing of vapors. Avoid prolonged breathing of spray or mists.

PREVENTION OF ACCIDENTAL INGESTION: Wash hands after handling and before eating.

RECOMMENDED STORAGE:

Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE: Keep container tightly closed.

Abbreviations: N/D - Not Determined N/A - Not Applicable

8. HEALTH HAZARD DATA

EYE CONTACT:

Mild Eye Irritation: signs/symptoms can include redness, swelling, pain, and tearing.

SKIN CONTACT: Mild Skin Irritation (after prolonged or repeated contact):

signs/symptoms can include redness, swelling, and itching.

Prolonged or repeated exposure may cause:

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

Ingestion is not a likely route of exposure to this product.

Ingestion may cause:

Gastrointestinal Effects: signs/symptoms generally will include abdominal pain.

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

MSDS: 3M Brand DEODORIZER CONCENTRATE: MOUNTAIN SPICE

MSDS: 3M Brand DEODORIZER CONCENTRATE: MOUNTAIN SPICE

5. ENVIRONMENTAL INFORMATION

material. Clean up residue.

Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Collect spilled

Flush spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Dispose of waste product in a sanitary landfill.

Abbreviations: N/D - Not Determined N/A - Not Applicable

SPILL RESPONSE:

RECOMMENDED DISPOSAL:

ENVIRONMENTAL DATA: Not determined.

PAGE 5

MSDS: 3M Brand DEODORIZER CONCENTRATE: FRESH SCENT

 pH:
 ca. 7

 VISCOSITY:
 < 100 centipoise</td>

Liquid, clear; blue color; fresh, clean fragrance.

Abbreviations: N/D - Not Determined N/A - Not Applicable

Melting point: N/A

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A
FLAMMABLE LIMITS - LEL: N/A
FLAMMABLE LIMITS - UEL: N/A
AUTOIGNITION TEMPERATURE: N/A

APPEARANCE AND ODOR:

FLASH POINT: .

February 13, 1995

Appendix33-001410

St. Paul, Minnesota 55144-1000 (612) 733-1110 3. FIRE AND EXPLOSION HAZARD DATA (continued) DIVISION: HOME AND COMMERCIAL CARE DIVISION EXTINGUISHING MEDIA: 3M Brand DEODORIZER CONCENTRATE: FRESH SCENT Water, Carbon dioxide, Dry chemical, Foam 3M Brand DEGDURIZER CONCENTRATE: 3M ID NUMBER/U.P.C.: 70-0706-3516-7 00-48011-20121-9 ISSUED: February 13, 1995 SUPERSEDES: November 15, 1994 SPECIAL FIRE FIGHTING PROCEDURES: Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head. DOCUMENT: 06-8475-3 1. INGREDIENT UNUSUAL FIRE AND EXPLOSION HAZARDS: No unusual fire or explosion hazards are anticipated. POLYALKOXY ALCOHOLS..... NFFA HAZARD CODES: HEALTH: 1 FIRE: 1 REACTIVITY: 0 UNUSUAL REACTION HAZARD: none 69013-18-9 - 60 FRAGRANCE..... TradeSecret 10 - 30 7732-18-5 OSHA FIRE HAZARD CLASS: Not applicable IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT. 4. REACTIVITY DATA 2. PHYSICAL DATA STABILITY: Stable INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID: Strong Oxidizing Agents. VAPOR PRESSURE: N/D
VAPOR DENSITY: N/D
EVAPORATION RATE: N/D
SOLUBILITY IN WATER: complete
SPECIFIC GRAVITY: ca. 1 Water=1 HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur. HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide and Carbon Dioxide, Irritant Vapors or Gases. PERCENT VOLATILE:.......... ca. 50 %
VOLATILE ORGANIC COMPOUNDS:... ca. 25 % VOC LESS H2O & EXEMPT SOLVENTS: N/D 5. ENVIRONMENTAL INFORMATION SPILL RESPONSE: Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container. APPEARANCE AND ODOR: Liquid, clear; dark blue color; strong fragrance 3. FIRE AND EXPLOSION HAZARD DATA RECOMMENDED DISPOSAL: Small quantities (less than 5 gal.(19 L)) may be discharged to a wastewater treatment system. Incinerate in a permitted hazardous waste incinerator. Dispose of completely absorbed waste product in a FLASH POINT:..... > 212 F TCC FLAMMABLE LIMITS - LEL: N/D
FLAMMABLE LIMITS - UEL: N/D
AUTOIGNITION TEMPERATURE: N/D hazardous waste facility. Abbreviations: N/D - Not Determined N/A - Not Applicable Abbreviations: N/D - Not Determined N/A - Not Applicable MATERIAL SAFETY MSDS: 3M Brand DEODORIZER (Ready-to-Use): MOUNTAIN SPICE DATA SHEET 3M Center November 15, 1994 PAGE 2 St. Paul, Minnesota 55144-1000 3. FIRE AND EXPLOSION HAZARD DATA (continued) (612) 733-1110 DIVISION: HOME AND COMMERCIAL CARE DIVISION TRADE NAME: EXTINGUISHING MEDIA: 3M Brand DEODORIZER (Ready-to-Use): MOUNTAIN SPICE Non-combustible. Choose material suitable for surrounding fire. 3M ID NUMBER: ISSUED: November 15, 1994 SPECIAL FIRE FIGHTING PROCEDURES: Not applicable SUPERSEDES: INITIAL ISSUE DOCUMENT: 06-8479-5 UNUSUAL FIRE AND EXPLOSION HAZARDS: Not applicable. C.A.S. NO. NFFA HAZARD CODES: HEALTH: 0 FIRE: 0 REACTIVITY: 0 UNUSUAL REACTION HAZARD: none > 95 POLYALKOXY ALCOHOLS... 69013-18-9 < 1 OSHA FIRE HAZARD CLASS: Not applicable TradeSecret EMULSIFIER.... 9005-64-5 < 1 4. REACTIVITY DATA IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT. STABILITY: Stable 2. PHYSICAL DATA INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID: Not applicable. BOILING FOINT:..... 212 F HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur. VAPOR PRESSURE: N/D VAPOR DENSITY: ... N/D EVAPORATION RATE: ... 1 Water-1 HAZARDOUS DECOMPOSITION PRODUCTS: Not applicable. 5. ENVIRONMENTAL INFORMATION SPILL RESPONSE: Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Collect spilled APPEARANCE AND ODOR: Liquid, clear; green color; spicy fragrance. material. Clean up residue. RECOMMENDED DISPOSAL. Flush spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Dispose of waste product in a sanitary landfill. 3. FIRE AND EXPLOSION HAZARD DATA ENVIRONMENTAL DATA: Not determined. Abbreviations: N/D - Not Determined N/A - Not Applicable Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand DEODORIZER CONCENTRATE: FRESH SCENT

PAGE 2

February 13, 1995

MATERIAL SAFETY

3M Center

DATA SHEET

```
June 21, 1995
                                                                              PAGE 3
                                                                                              June 21, 1995
                                                                                                                                                                            PAGE 4
                                                                                                7. PRECAUTIONARY INFORMATION
  5. ENVIRONMENTAL INFORMATION
                                     (continued)
                                                                                                                                    (continued)
ENVIRONMENTAL DATA:
                                                                                              RECOMMENDED VENTILATION:
                                                                                                Use in a well-ventilated area.
  Not determined
REGULATORY INFORMATION:
                                                                                                ** When used as directed, no special ventilation is required.
  Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number - None (Not U.S.
                                                                                              RESPIRATORY PROTECTION:
                                                                                                Avoid breathing of vapors, mists or spray.
  EPA Hazardous).
                                                                                                 ** When used as directed, respiratory protection is not required.
  TSCA: All components used in the manufacture of this material are in
  compliance with the US TSCA inventory.
                                                                                              PREVENTION OF ACCIDENTAL INGESTION:
Wash hands after handling and before eating.
  FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: Yes CHRONIC: No
                                                                                                Store away from heat. Keep container in well-ventilated area.
  6. SUGGESTED FIRST AID
                                                                                              FIRE AND EXPLOSION AVOIDANCE:
                                                                                                Keep container tightly closed.
EYE CONTACT:
  Immediately flush eyes with large amounts of water for at least 15
                                                                                              OTHER PRECAUTIONARY INFORMATION:
                                                                                                ** NOTE: This material is intended to be diluted only with the 3M Twist 'N Fill Chemical Dispenser.
  minutes. Get immediate medical attention.
  Flush skin with large amounts of water. If irritation persists, get medical attention.
                                                                                                                                  EXPOSURE LIMITS
INHALATION:
                                                                                                                                                                       AUTH SKIN*
                                                                                              INGREDIENT
                                                                                                                                            VALUE UNIT
                                                                                                                                                                TYPE
  If signs/symptoms occur, remove person to fresh air. If
  signs/symptoms continue, call a physician.
                                                                                              POLYALKOXY ALCOHOLS.....
                                                                                                                                                                NONE
                                                                                                                                                                        NONE
                                                                                                                                            NONE
                                                                                                                                                    NONE
                                                                                              FRAGRANCE.....
IF SWALLOWED:
                                                                                              WATER.
EMULSIFIER.
                                                                                                                                            NONE
                                                                                                                                                    NONE
                                                                                                                                                                NONE
                                                                                                                                                                        NONE
  Do not induce vomiting. Drink two glasses of water. Call a physician.
                                                                                                                                                    NONE
                                                                                                                                                                NONE
                                                                                                                                                                        NONE
                                                                                                                                            NONE
                                                                                              1-METHOXY-2-PROPANOL........
                                                                                                                                                                         ACGIH
                                                                                              1-METHOXY-2-PROPANOL.....
                                                                                                                                            150
                                                                                                                                                    PPM
                                                                                                                                                                STEL
                                                                                                                                                                        ACGIH
  7. PRECAUTIONARY INFORMATION
                                                                                              1-METHOXY-2-PROPANOL......
                                                                                              1-METHOXY-2-PROPANOL......
                                                                                                                                            150
                                                                                                                                                                STEL
                                                                                                                                                                        OSHA
EYE PROTECTION:
                                                                                              * SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to
                                                                                              the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.
  Avoid eye contact. Wear vented goggles.
   ** When used as directed, eye contact with this material is not
                                                                                              SOURCE OF EXPOSURE LIMIT DATA:
                                                                                                ACGIH: American Conference of Governmental Industrial Hygienists
  Avoid skin contact.
                                                                                                OSHA: Occupational Safety and Health Administration
                                                                                                NONE: None Established
   ** When used as directed, skin contact with this material is not
  expected to occur.
Abbreviations: N/D - Not Determined N/A - Not Applicable
                                                                                              Abbreviations: N/D - Not Determined N/A - Not Applicable
MATERIAL SAFETY
                                                                                              MSDS: 3M Brand NON-ACID BATHROOM CLEANER (Ready-to-Use)
                       3M Center
                                                                                              May 30, 1995
                                                                                                                                                                             PAGE 2
                       St. Paul, Minnesota
                        55144-1000
                        (612) 733-1110
                                                                                                3. FIRE AND EXPLOSION HAZARD DATA
                                                                                                                                          (continued)
DIVISION: HOME AND COMMERCIAL CARE DIVISION
TRADE NAME:
                                                                                              SPECIAL FIRE FIGHTING PROCEDURES:
3M Brand NON-ACID BATHROOM CLEANER (Ready-to-Use) ISSUED: May 30, 1995
SUPERSEDES: INITIAL ISSUE
                                                                                                None known.
                                                                                              UNUSUAL FIRE AND EXPLOSION HAZARDS:
DOCUMENT: 05-8144-7
                                                                                                No unusual fire or explosion hazards are anticipated.
                                                                                              NFPA HAZARD CODES: HEALTH: 0 FIRE: 0 REACTIVITY: 0
  1. INGREDIENT
                                                                     PERCENT
                                                C.A.S. NO.
                                                                                                                    UNUSUAL REACTION HAZARD: none
                                                7732-18-5
                                                                         > 95
CARBOXYIMIDAZOLINIUM SALT.....
                                                13039-35-5
                                                                                                4. REACTIVITY DATA
                                                Unknown
  IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24
                                                                                              STABILITY: Stable
  HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS MATERIAL.
                                                                                              INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
                                                                                                Not applicable.
  2. PHYSICAL DATA
                                                                                              HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.
BOILING POINT:...... ca. 210 F
                                                                                              HAZARDOUS DECOMPOSITION PRODUCTS
VAPOR PRESSURE: N/D
VAPOR DENSITY: N/D
EVAPORATION RATE: N/D
SOLUBILITY IN WATER: complete
                                                                                                Carbon Monoxide and Carbon Dioxide.
                                                                                                5. ENVIRONMENTAL INFORMATION
SPECIFIC GRAVITY: ... ca. 1.00 Water=1
PERCENT VOLATILE: ... ca. 98 %
VOLATILE ORGANIC COMPOUNDS: ... < 12 gms/liter
                                                                                              SPILL RESPONSE:
VOC LESS H2O & EXEMPT SOLVENTS: N/D
                                                                                                Observe precautions from other sections. Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place in a closed container.
PH: ..... 8 - 9
VISCOSITY: .... < 100 centipoise
MELTING POINT:..... N/A
                                                                                              RECOMMENDED DISPOSAL:
APPEARANCE AND ODOR:
                                                                                                Discharge spent solutions and small quantities (less than 5 gal.(19
  Liquid, clear; light green color; pleasant fragrance
                                                                                                L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. For larger quantities: Incinerate in an industrial
                                                                                                or commercial facility in the presence of a combustible material.
  3. FIRE AND EXPLOSION HAZARD DATA
                                                                                              ENVIRONMENTAL DATA:
                                                                                                Not determined.
REGULATORY INFORMATION:
                                                                                                Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S.
                                                                                                EPA Hazardous).
EXTINGUISHING MEDIA:
  Water, Carbon dioxide, Dry chemical, Foam
                                                                                              EPCRA HAZARD CLASS:
                                                                                                FIRE HAZARD: NO PRESSURE: NO REACTIVITY: NO ACUTE: Yes CHRONIC: No
Abbreviations: N/D - Not Determined N/A - Not Applicable
                                                                                              Abbreviations: N/D - Not Determined N/A - Not Applicable
```

MSDS; 3M Brand DEODORIZER CONCENTRATE: COUNTRY GARDEN

MSDS: 3M Brand DEODORIZER CONCENTRATE: COUNTRY GARDEN

EXPOSURE LIMITS

(continued)

INGREDIENT	VALUE		TYPE	AUTH	
FRAGRANCESODIUM DODECYLBENZENESULFONATE	NONE NONE	NONE NONE	NONE NONE	NONE NONE	

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA: NONE: None Established

.,... 8. HEALTH HAZARD DATA

EYE CONTACT: Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing, and hazy vision.

SKIN CONTACT:

Moderate Skin Irritation: signs/symptoms can include redness, swelling, itching, and dryness.

May be absorbed through the skin and produce effects similiar to those caused by inhalation and/or ingestion.

INHALATION:

Single exposure may cause:

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

Prolonged or repeated exposure may cause:

Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, incoordination, slowed reaction time, slurred speech, giddiness and unconsciousness.

WHILE THE FOLLOWING EFFECTS ARE ASSOCIATED WITH ONE OR MORE OF THE INDIVIDUAL INGREDIENTS IN THIS PRODUCT AND ARE REQUIRED TO BE INCLUDED ON THE MSDS BY THE U.S. OSHA HAZARD COMMUNICATION STANDARD, THEY ARE NOT EXPECTED EFFECTS DURING FORESEEABLE USE OF THIS PRODUCT.

Prolonged or repeated exposure may cause:

Kidney Effects: signs/symptoms can include reduced urine volume, blood in urine and back pain.

Liver Effects: signs/symptoms can include yellow skin(jaundice) and tenderness of upper abdomen.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER CONCENTRATE September 15, 1995

8. HEALTH HAZARD DATA (continued)

IF SWALLOWED:

Ingestion is not a likely route of exposure to this product.

Ingestion may cause:

Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in feces.

Aspiration Pneumonitis: signs/symptoms can include coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

OTHER HEALTH HAZARD INFORMATION:
HMIS: HEALTH-1 /FLAMMABILITY-2 /REACTIVITY-0 /PERSONAL PROTECTION-B

SECTION CHANGE DATES

HEALTH HAZARD DATA SECTION CHANGED SINCE February 13, 1995 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

MSDS: 3M Brand NON-ACID BATHROOM CLEANER (Ready-to-Use)

May 30, 1995

PAGE 5

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

MATERIAL SAFETY DATA SHEET TRADE NAME: 1. INGREDIENT WATER... 2. PHYSICAL DATA

3M Center St. Paul, Minnesota 55144-1000 (612) 733-1110

DIVISION: HOME AND COMMERCIAL CARE DIVISION

3M Brand BONNET CLEANER CONCENTRATE

70-0706-3509-2 00-48011-20114-1 70-0706-3510-0 00-48011-20115-8 ISSUED: September 15, 1995 SUPERSEDES: February 13, 1995 DOCUMENT: 06-7835-9

C.A.S. NO. PERCENT 7732-18-5 1-PROPOXY-2-PROPANOL.. 1569-01-3 - 10 STYRENE MALEIC ANHYDRIDE RESIN AMMONIUM 26022-09-3 - 5 Fluorcaliphatic acid salt (N.J. trade secret registry 04499600-5170P)..... TradeSecret - 5 Unknown SODIUM DODECYLBENZENESULFONATE..... 25155-30-0 - 5

IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT.

BOILING POINT:..... ca. 212 F VAPOR PRESSURE: N/D
VAPOR DENSITY: N/D
EVAPORATION RATE: ca. 1 Water=1
SOLUBILITY IN WATER: complete

SPECIFIC GRAVITY:..... ca. 1.01 Water=1 PERCENT VOLATILE:

VOLATILE ORGANIC COMPOUNDS:

VOC LESS H20 & EXEMPT SOLVENTS:

VISCOSITY:

VISCOSITY:

VIA THE DAINER.

Ca. 95 %

100 gms/liter

7 - 9

VISCOSITY:

VINCOSITY:

N/A

MELTING POINT:..... N/A

APPEARANCE AND ODOR:

Liquid, clear; colorless to light amber color; pleasant fragrance

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand BONNET CLEANER CONCENTRATE September 15, 1995

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: ... ca. 142 F TCC
FLAMMABLE LIMITS - LEL: N/D
FLAMMABLE LIMITS - UEL: N/D

AUTOIGNITION TEMPERATURE: N/D

EXTINGUISHING MEDIA:

Water, Carbon dioxide, Dry chemical, Foam

SPECIAL FIRE FIGHTING PROCEDURES: Not applicable

UNUSUAL FIRE AND EXPLOSION HAZARDS: Not applicable.

NFPA HAZARD CODES: HEALTH: 1 FIRE: 2 REACTIVITY: 0 UNUSUAL REACTION HAZARD:

OSHA FIRE HAZARD CLASS: Class IIIA Combustible Liquid

STABILITY: Stable

4. REACTIVITY DATA

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID: Not applicable.

HAZARDOUS FOLYMERIZATION: Hazardous polymerization will not occur.

PAGE 2

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide and Carbon Dioxide.

5. ENVIRONMENTAL INFORMATION

SPILL RESPONSE:

Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. In the U.S.A., call (612) 733-1110 or (612) 733-6100 for 24-hour spill assistance. Extinguish all ignition sources. Collect spilled material. Clean up residue with water.

RECOMMENDED DISPOSAL:

Flush spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Incinerate in a permitted hazardous waste incinerator in the presence of a combustible material.

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand SANITIZER (Ready-to-Use)

April 10, 1995

6. SUGGESTED FIRST AID

EYE CONTACT:

Immediately flush eyes with large amounts of water. Get immediate medical attention.

SKIN CONTACT:

Wash affected area with scap and water.

INHALATION:

If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician.

IF SWALLOWED:

Do not induce vomiting. Drink two glasses of water. Call a physician.

7. PRECAUTIONARY INFORMATION

EYE PROTECTION:

Avoid eye contact with vapor, spray, or mist.

OTECTION

Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:

Provide ventilation adequate to control vapor concentrations below recommended exposure limits and/or control spray or mist.

RESPIRATORY PROTECTION: Avoid prolonged breathing of spray or mists.

PREVENTION OF ACCIDENTAL INGESTION:

Do not ingest.

RECOMMENDED STORAGE:

Keep container closed when not in use. Keep out of the reach of children.

FIRE AND EXPLOSION AVOIDANCE: Not applicable.

EXPOSURE LIMITS

INGREDIENT AUTH SKIN* VALUE UNIT TYPE WATER... NONE NONE NONE NONE DIDECYLDIMETHYLAMMONIUM CHLORIDE.... NONE NONE NONE NONE ALKYLDIMETHYLBENZYL AMMONIUM CHLORIDE..... NONE NONE NONE NONE

Abbreviations: N/D - Not Determined N/A - Not Applicable

MSDS: 3M Brand SANITIZER (Ready-to-Use) April 10, 1995

> EXPOSURE LIMITS (continued)

VALUE UNIT TYPE AUTH SKIN* INGREDIENT

* SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA: - NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:

Mild Eye Irritation: signs/symptoms can include redness, swelling,

No adverse health effects are expected from skin contact.

INHALATION:

No adverse health effects are expected from inhalation exposure.

IF SWALLOWED:

Ingestion is not a likely route of exposure to this product.

No adverse health effects are expected from swallowing.

OTHER HEALTH HAZARD INFORMATION:

HMIS: HEALTH=0 /FLAMMABILITY=0 /REACTIVITY=0 / PERSONAL PROTECTION=A

SECTION CHANGE DATES

HEALTH HAZARD DATA SECTION CHANGED SINCE April 04, 1995 ISSUE

Abbreviations: N/D - Not Determined N/A - Not Applicable

The information on this Data Sheet represents our current data and best opinion as to the proper use and handling of this product under normal conditions. Any use of the product which is not in conformance with this Data Sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

PAGE 4

PRODUCT NAME

STAINLESS STEEL CASTINGS

Refer to Material Safety Data Sheet for more information

MANUFACTURER



Eagle Foundry Co. P.O. Box 250 Eagle Creek, OR 97022 (503) 637-3048 FAX-3091

FIRE HAZARD

- 4. Extremely Dangerous Fire and Explosion Hazard
 - 3. Fire and Explosion Hazard at Normal Temp.
 - 2. Will Burn at Temps. Above 100 deg. F.
 - 1. Will Burn at Temps. above 200 deg. F.

(Red)

0

(Yellow)

0

HEALTH **HAZARD** 0. Will Not Burn

(Blue)

0

4. Extreme Hazard **Avoid Contact or** Breathing Vapor.

3. Severe Hazard - Use Special clothing and Masks.

2. Hazardous - Use Masks or Special Ventilation.

1. Slightly Hazardous Irritating.

0. Normal Material.

REACT-IVITY **HAZARD**

- 4. Extreme Hazard -Vacate Area in Case of Fire
- 3. Severe Explosion Hazard
- 2. Violent Chemical Change Possible
- 1. Unstable if Heated
- 0. Normally Stable

CAUTION! WELDING, CUTTING OR GRINDING ON THIS CASTING WILL **GENERATE TOXIC DUST AND FUMES**

INGREDIENTS:

STORAGE AND HANDLING

NO SPECIAL PRECAUTIONS

See Material Safety Data Sheet for listing of ingredients

MATERIAL SAFETY DATA SHEET (MSDS) CONFORMS TO REQUIREMENTS OF OSHA STANDARD 1910.1200 "HAZARD COMMUNICATION" AND TO VARIOUS STATE "EMPLOYEE RIGHT TO KNOW" LAWS

SECTION I PRODUCT IDENTIFICATION

This MSDS supplied for: STAINLESS STEEL

INCLUDES: 16-2, HC, HD, HE, HF, HH, HK, HK40, HL and HT

ASTM ALLOY DESIGNATION

A297/A297M-89

PROPRIETARY ALLOY

16-2

<u>VENDOR NAME AND ADDRESS</u>:

EAGLE FOUNDRY COMPANY

P.O. BOX 250

EAGLE CREEK, OR 97022-0250

EMERGENCY PHONE NUMBER:

(503) 637-3048

HAZARD CLASSIFICATIONS

FIRE: 0

HËALTH: 0

REACTIVITY: 0

FOURTH DIAMOND:

ANSI: CAUTION! WELDING, CUTTING OR GRINDING ON THIS CASTING WILL

GENERATE TOXIC DUST AND OR FUMES

SECTION II - HAZARDOUS COMPONENTS

INGREDIENT	CAS NO.	PERCENT	TLV	PEL
Aluminum	7429-90-5	0.00 - 0.25	10 mg/cu.m	N/E
Carbon	7440-44-0	0.03 - 0.75	N/E	N/E
Chromium	7440-47-3	10.0 - 52.0	0.5 mg/cu.m	1 mg/cu.m
Chromium * (hexavalent)			0.05 mg/cu.m	
Cobalt	7440-48-4	0.00 - 2.5	0.1 mg/cu.m	0.1 mg/cu.m
Columbium		0.00 - 1.2	N/E	N/E
Copper	7440-50-8	0.00 - 4.0	.2 mg/cu.m	.1 mg/cu.m
	as fu		as fume	as fume
			1 mg/cu.m	1 mg/cu.m
			as dust	as dust
Iron	7439-89-6	balance	5 mg/cu.m	10 mg/cu.m
Manganese	7439-96-5	0.30 - 6.00	C 5 mg/cu.m	C 5 mg/cu.m
			as dust	as dust
			1 mg/cu.m	C 5 mg/cu.m
			as fume	as fume
Molybdenum	7439-8-7	0.00 - 20.0	10 mg/cu.m	15 mg/cu.m
Nickel	7440-02-0	0.00 - 40.0	1 mg/cu.m	1 mg/cu.m
Nitrogen	7727-37-9	0.00 - 0.3	N/E	N/E

N/E means none established.

N/A means not applicable.

Phosphorus	7723-14-0	0.00 - 0.3	.1 mg/cu.m	.1 mg/cu.m
Silicon	7440-21-3	0.50 - 3.50	10 mg/cu.m	15 mg/cu.m
			as dust	
Sulfur	7704-34-9	0.00 - 0.15	N/E	N/E
Tantalum	7740-25-7	0.00 - 1.1	5 mg/cu.m	5 mg/cu.m
Titanium	7440-32-6	0.00 - 0.50	N/E	N/E
Tungsten	7440-33-7	0.00 - 5.25	5 mg/cu.m	N/E
Vanadium	1314-62-1	0.00 - 0.40	0.05 mg/cu.m	0.5 mg/cu.m
as vanadium			as dust	as dust
oxide			0.05 mg/cu.m	0.1 mg/cu.m
			as fume	as fume

[&]quot;C" MEANS CEILING LIMIT - these are limits which should not be exceeded, even for a short time. All other are 8 hr. Time-weighted average concentrations.

SECTION III - OVERVIEW

There are no chemical hazards from these castings in solid form.

Welding or flame cutting may convert a fraction of the chromium to the water insoluble hexavalent (carcinogenic) form

Dust or fumes generated by machining, grinding, or welding on the casting will put contaminants in the air. Since the casting contains mostly chromium and/or nickel, most of the airborne contaminants will be chromium and nickel dust and fumes.

Some forms of nickel have been found to cause cancer in animals. One form, nickel subsulfide, which was present in an old smelting processes no longer used, apparently caused nasal cancer in humans. Since then, studies have shown that the potential for ordinary forms of nickel and its oxides to cause cancer in humans is very weak, if it exists at all.

High production machining, grinding, welding operations, etc. Frequently require local exhaust ventilation. If ventilation is not adequate, wear a NIOSH approved dust and fume respirator.

Grinding on castings that have not been cleaned or that contain embedded sand will generate significant amounts of dust containing free silica, which can cause silicosis. Good local ventilation is frequently required to prevent over-exposure in this situation. If good ventilation is not available, use a NIOSH-approved dust respirator.

^{*} Water insoluble hexavalent chromium is classified as a human carcinogen by the American Conference of Government Industrial Hygienists (ACGIH). Approximately 66% of the total chromium in welding fume is hexavalent, and only 5% of that is insoluble. Overexposure to hexavalent chromium is not likely if general welding fume is controlled. (The alloy and its dust does not contain insoluble hexavalent chromium.)

The other metals in stainless steel castings are present in small amounts compared to the nickel and chromium. If airborne concentrations of chromium and nickel are controlled to levels below their respective TLVs and PELs, these minor constituents would also be adequately controlled.

Other toxic metals in the alloy are present in small amounts that will not represent a hazard if iron dust and fume are adequately controlled.

SECTION IV - PHYSICAL DATA

PHYSICAL DESCRIPTION: Solid, silver gray in color, no odor.

BOILING POINT: variable depending on casting grade.

VAPOR PRESSURE: N/A.
SOLUBILITY IN WATER: N/A.

SPECIFIC GRAVITY: 8.9 for nickel.

PERCENT VOLATILE BY VOLUME: N/A.

EVAPORATION RATE: N/A.

SECTION V - FIRE AND EXPLOSION DATA

Castings will not burn or explode.

SECTION VI - HEALTH HAZARD DATA

EYES: Metal particles in the eyes may cause irritation if not removed.

<u>SKIN</u>: Dust of fumes may cause irritation. In some sensitive people, allergic dermatitis may develop.

BREATHING: Over exposure to chromium fumes may cause nose irritation.

Repeated inhalation, especially when combined with inadequate personal hygiene, may result in a perforated nasal septum. Breathing excessive amounts of silica dust for a long time can cause silicosis. Silicosis causes shortness of breath, reduced capacity to do work, and weakens the defenses against other lung diseases.

SWALLOWING: N/A.

NOISE: Grinding or machining castings is noisy.

The OSHA limit for noise averaged over 8 hours is 90 decibels (dBA),a hearing conservation program is required if exposure is over 85 dBA. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

------FIRST AID ------

<u>IF IN EYES</u>: Metal Particles should be removed by trained individuals such as a Nurse or Physician.

IF ON SKIN: N/A.

IF BREATHED: (fumes from welding): Move to fresh air.

IF SWALLOWED: N/A.

N/E means none established.

N/A means not applicable.

SECTION VII - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: Will not occur.

STABILITY: Stable.

<u>INCOMPATIBILITY</u>: Chromium metal dust may burn or explode when in contact with ammonium nitrate.

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

If damaged, return castings to vendor or send to scrap reclaimer.

Collected dust from machining, welding, etc. May be classed as a "hazardous waste" depending on circumstances. Consult local authorities regarding disposal.

SECTION IX - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: Wear a NIOSH approved respirator for dust or fumes if concentrations exceed the TLV or PEL.

<u>VENTILATION</u>: Provide general ventilation and or local exhaust if necessary to maintain concentrations below the TLVs.

PROTECTIVE GLOVES: Work gloves advisable for handling castings.

EYE PROTECTION: Safety glasses with side shields and/or face shields for particles (grinding). Welding goggles or helmet for welding.

OTHER PROTECTIVE EQUIPMENT: Wear a protective apron and gauntlets if arcair gouging or cutting, or welding on castings. If noise is at or above 90 dBA you should wear ear muffs or ear plugs.

SECTION X - SPECIAL PRECAUTIONS OR OTHER COMMENTS

STORAGE: No special precautions.

THE INFORMATION HEREIN IS BASED ON THE VENDOR'S MSDS WITH ADDITIONS AS NECESSARY TO COMPLY WITH CURRENT REGULATIONS. THE INFORMATION IS BELIEVED TO BE ACCURATE BUT UNDER THE CIRCUMSTANCES IS NOT WARRANTED TO BE.

N/E means none established.

N/A means not applicable.

EPORT NUMBER: 703 SDS NO: 0x622680 TFECTIVE DATE: 04/21/95 VAN WATERS & ROCERS INC. MATERIAL SAFETY DATA SHEET PAGE: 001

VERSION: 003

RO' TT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 346619 PROD NO: 640381

ASH GROVE CEMENT 13939 N. RIVERGATE BLVD

PORTLAND ,OR 97203

AN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400 100 CARILLON POINT , KIRKLAND , WA 98033

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL - CHEMIREC (800)424-9300

RODUCT NAME: ODIUM HYPOCHLORITE 7-15%

SDS #: 0X622680

DEC 7 1995

I, PRODUCT IDENTIFICATION

PRODUCT NAME: SODIUM HYPOCHLORITE 7-15%
SYNONYMS: Liquid chlorine, liquid bleach, Pure Chlor, Sunny Sol 150
CHEMICAL FAMILY: Hypochlorite
FORMULA: NaOCl in water
DESCRIPTION: Swimming pool chlorinator, Microbiocide
OSHA HAZARO CLASSIFICATION: Oxidizer, unstable (reactive), corresive to skin and eyes, lung toxin

II. COMPONENT DATA

PRODUCT COMPOSITION

CAS or CHEMICAL NAME: Sodium hypochlorite
CAS NUMBER: 7681-52-9
PERCENTAGE RANGE: 7-15
HAZARDOUS PER 29 CFR 1910.1200: Yes
(POSURE STANDARDS: None Established

AS or CHEMICAL NAME: Water
CAS NUMBER: 7232-18-5
PERCENTAGE RANGE: 73-87

EPORT NUMBER: 703 SDS NO: 0x622680 VAN WATERS & ROSERS INC. MATERIAL SAFETY DATA SHEET

FFECTIVE DATE: 04/21/95

VERSION: 003

PAGE: 003

ROWDCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 346619 PROD NO: 640381

U. PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Respirator protection not normally needed since the volatility and toxicity are low. If vapors,

mists, or aerosols are generated, wear a NIOSH/

MSHA approved respirator.

VENTILATION: Local exhaust ventilation is recommended if vapors, mists or aerosols are generated. Otherwise, use general exhaust ventilation.

SKIN PROTECTIVE EQUIPMENT: Use chemical safety goggles and impermeable gloves.

EQUIPMENT SPECIFICATIONS:

RESPIRATOR TYPE: NIOSH/MSHA approved respirator equipped with

chemical cartridges for protection against chlorine

gas and dust mist pre-filters.

OLOVE TYPE: Neoprene

VI. FIRE AND EXPLOSION HAZARD INFORMATION

FLAMMABILITY DATA:

FLAMMABLE: No COMBUSTIBLE: No PYROPHORIC: No

FLASM POINT: Not Applicable

AUTOIGNITION TEMPERATURE : Not Applicable

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT

VOLUME IN AIR): LEL - Not Applicable UEL - Not Applicable

NFPA RATINGS: Not Established

HMIS RATINGS:

Health: 3
Flammability: 0
Peactivity: 2

EXTINGUISHING MEDIA: Not applicable

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. On small fire, use dry chemical, Carbon dioxide or water spray. On large fires, use water in flooding quantities as fog. In case of fire, hazardous concentrations of chlorine may be formed. See Section XI for personal protective equipment for fire fighting.

VII. REACTIVITY INFORMATION

OITIONS UNDER WHICH THIS PROQUET MAY BE UNSTABLE

TEMPERATURES ABOVE: Decomposes as it is heated

MECHANICAL SHOCK OR IMPACT: No

ELECTRICAL (STATIC) DISCHARGE: No.

OTMER: Decomposition will result from contact with iron or copper

EPORT NUMBER: 703 SDS NO: 0X622680 VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET PAGE: 004

FFECTIVE DATE: 04/21/95

VERSION: 003

RODGUM HYPOCHLORITE 7-15%

ORDER NO: 346619 PROD NO: 640381

MAZARDOUS POLYMERIZATION: Will not occur

INCOMPATIBLE MATERIALS: Iron, copper, acids, ammonium compounds,

organics, other oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Chlorine gas

OTHER CONDITIONS TO AVOID: High heat, sunlight and ultra-violet light

SUMMARY OF REACTIVITY:

OXIDIZER

Yes

· PYROPHORIC:

Νo

ORGANIC PEROXIDE:

No

WATER REACTIVE:

No

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before remuse.

TNGESTION: Immediately drink large quantities of water. BO NOT induce vomiting. Call a physician at once. BO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

TX. TOXICOLOGY AND HEALTH INFORMATION

ROUTES OF ABSORPTION

Inhalation, skin, eye, ingestion

WARNING STATEMENTS AND WARNING PROPERTIES

HARMFUL IN INHALED OR INGESTED, HARMFUL IF EXPOSED TO SKIN OR EYES. HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: Approximately 0.9 mg/m3 (0.3 ppm) based on odor of chlorine.

TRRITATION THRESHOLD: There is no data for irritation threshold. Sodium hypochlorite has the potential to be immediately dangerous to life or health.

SECNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

Inhalation of this material is irritating to the nose, mouth, throat

EPORT NUMBER: 703-1905 NO: 0X622680 VAN WATERS & ROOERS INC. MATERIAL SAFETY DATA SHEET

VERSION: 003

PAGE: 005

FFFCTIVE DATE: 04/21/95

'ROBUCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 346619 PROD NO: 640381

and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain, and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage.

Repeated inhalation exposure may cause impairment of lung function and permanent lung damage.

FYE

Severe irritation and/or burns can occur following eye exposure. Contact may cause impairment of vision and corneal damage.

M.L.R.

ACUTEL

CHRONICA

Dermal exposure can cause severe irritation and/or burns characterized by redness, swelling and scab formation. Prolenged skin exposure may cause destruction of the dermis with impairment of the skin at site of contact to regenerate.

CHRONICE

Effects from chronic skin exposure would be similar to those from \sim single exposure except for effects secondary to tissue destruction. INGESTION

ACUTE:

Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration.

CHRONIC:

There are no known or reported effects from chronic exposure.

NECTOAL CONCITTORS AGGRAVATED BY EXPOSURE

Asthma and respiratory and cardiovascular disease INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY None knows or reported.

ANIMAL TOXICOLOGY

ACUTE TOXICITY:

THMALATION LCSO: No available data

ORAL LOSO: Approximately 3-5 g/kg (rat)

DERMAL LDSO: > 2 g/kg (rabbit)

Causes burns to eyes and skin

AQUATIC TOXICITY:

Aquatic LC50 - approximately 0.6 mg/l (bluegill) approximately 1 mg/l (daphnia, 48 hours)

CHRONIC TOXICITY:

There are no known or reported effects from repeated exposure.

REPRODUCTIVE TOXICITY:

There are no known or reported effects on reproductive function or fetal development.

CARCINOGENICITY:

This product has been shown not to be carcinogenic. It is not included as a carcinogen by TARC, OSHA, NTP, or EPA.

EPORT NUMBER: 703 SDS NO: DX622680

FFECTIVE DATE: 04/21/95

VAN WATERS & ROGERS INC. MATERIAL SAFETY DATA SHEET PAGE: 006

VERSION: 003

RODUCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 346619 PROD NO: 640381

MUTAGENICITY:

Sodium hypochlorite has been shown to produce damage to genetic material when tested in vitro. Studies in vivo have shown no evidence of mutagenic potential for this material. Chemicals with potent biocidal activity, typical of hypochlorite compounds, may compromise the integrity of many of the treated cells which remain viable during an in vitro assay. This result would likely produce cellular changes giving rise to a response indicative of mutation. It is judged that the risk of genetic damage is insignificant for sodium hypochlorite because of its biocidal activity, lack of mutagenicity in vivo, and failure to produce a carcinogenic response.

X. TRANSPORTATION INFORMATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:

LAND (U.S. DOT): HYPOCHLORITE SOLUTIONS, 8, UN1791, PG II

WATER (IMO): Same as above

TR (IATA/ICAO): Same as above

HE ARD LABEL/PLACARD: CORROSIVE

REPORTABLE QUANTITY: 100 lbs. (Per 49 CFR 172.101, Appendix)

EMERGENCY GUIDE NO: 60

XI. SPILL AND LEAKAGE PROCEDURES

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300 REPORTABLE QUANTITY(POUNDS): 100 lbs. (Per 40 CFR 302.4) SPILL MITIGATION PROCEDURES:

Hazardous concentrations in air may be found in local spill area and immediately downwind.

AIR RELEASE: Vapors may be suppressed by the use of a water fog. Capture all run off water for treatment and disposal.

WATER RELEASE: This material is soluble in water. Dike or contain material via use of compatible absorbents. Remove material with use of vacuum or pump operation and treat before disposition. This material is harmful to aquatic life.

LANO SPILL: Compatible absorbents: Sand, clay soil, commercial absorbents

SPILL RESIDUES:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.
PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:
Response to this material requires the use of self contained breathing apparatus (SCBA).

Additional protective clothing must be worn to prevent personal contact the this material, these items include but are not limited to boots, gloves, hard hat, impervious clothing, i.e. chemically impermeable suit. Compatible materials for response to this material are neoprene, butyl rubber, viton and saranex.

REPORT NUMBER: 703 ISDS NO: 0X622680 IFFECTIVE DATE: 04/21/95 VAN WATERS & ROCERS INC. MATERIAL SAFETY DATA SHEET PAGE: 007

VERSION: 003

RODDCT: SODIUM HYPOCHLORITE 7-15%

ORDER NO: 346619 PROD NO: 640381

XII. WASTE DISPOSAL

If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

As a nonhazardous liquid waste, it should be disposed of in accordance with local, state and federal regulations by treatment in a wastewater treatment system.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII. ADDITIONAL REGULATORY STATUS INFORMATION
TOXIC SUBSTANCES CONTROL ACT: This substance is listed on the Toxic
ubstances Control Act inventory.

SWERFUND AMENOMENTS AND REAUTHORIZATION ACT TITLE III: None Established HAZARD CATEGORIES, PER 40 CFR 370.2:

HEALTH:

Immediate (Acute)
Delayed (Chronic)

PHYSICALL

Fire

Reactivity

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A: *EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

None Established

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45: None Established

XIV. ADDITIONAL INFORMATION
MSDS REVISION STATUS: Transportation information updated

EPORT NUMBER: 703 ISDS NO: 0X622480

FFECTIVE DATE: 04/21/95

VAN WATERS & ROSERS INC. MATERIAL SAFETY DATA SHEET PAGE: 008

VERSION: 003

Rador: SODIUM HYPOCHLORITE 7-15%

ORDER NO PROD NO	
FOR ADDITIONAL INFORMATION	
CONTACT: MSDS COORDINATOR VAN WATERS & ROGERS INC. DURING BUSINESS HOURS, PACIFIC TIME (206)889-3400	
12/07/95 11: 23 PRODUCT: 640381 CUST NO: 107510 ORBER	NO: 346619
NOTICE	
IPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR	PURPOSE,
TH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED MEREIN, AND SHA	LL UNDER
CIRCUMSTANCES BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.	у. ф.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE ANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS ELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR UFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&RS CONTROL AND THEREFORE USERS RE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO ETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY SQUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM HE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. HIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT ELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER ROCESS.

* * * END OF MSDS * * *

TEXACO MATERIAL SAFETY DATA SHEET

This MSDS was printed utilizing access to Texaco's CD-ROM MSDS Database. Due to variations in printer dependent character styles, fonts and computer trol codes, the appearance may differ from that of the centrally printed Texaco MSDS.

NOTE: Read and understand Material Safety Data Sheet before handling or disposing of product.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY

Product Code and Name:

W2324 MEROPA 320

Chemical Name and/or Family or Description:

Gear Oils

Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

Telephone Numbers:

Transportation Emergency-Company (914) 831-3400

CHEMTRÉC: (800) 424-9300

Health Emergency -Company : (914) 831-3400

General MSDS Assistance ·: (914) 838-7204 Technical Information -Fuels : (914) 838-7336

-Chemical : (512) 459-6543 -Lubricant/: (800) 782-7852

Antifreezes

-Additives: (713) 235-6278 -Solvents: (800) 876-3738

N.	D NOT DETERM	INED	N.A NOT APPLICABLE	N.T NOT TESTED		
<	- LESS THAN	>	- GREATER THAN			

PRODUCT CODE: W2324 NAME: MEROPA 320

Date Issued: 12/08/95 Supersedes: 09/15/95

OMPOSITION/INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION.

Product and/or Component(s) Carcinogenic According to:

OSHA IARC NTP OTHER NONE

Χ

Composition: (Sequence Number and Chemical Name)

Seq. Chemical Name

CAS Number

Range in %

01 # Solvent deasphalted residual oil

64741-95-3 65.00-79.99

02 # Solvent dewaxed, heavy paraffinic petroleum 64742-65-0 20.00-34.99 distillate

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Exposure Limits referenced by Sequence Number in the Composition Section Seq. Limit

- 5 mg/m3 TWA-OSHA (MINERAL OIL MIST)
- 5 mg/m3 TWA-ACGIH (MINERAL OIL MIST)
- 01 10 mg/m3 STEL ACGIH (MINERAL OIL MIST)
- 02 5 mg/m3 TWA-OSHA (MINERAL OIL MIST)
- 02 5 mg/m3 TWA-ACGIH (MINERAL OIL MIST)
- 02 10 mg/m3 STEL ACGIH (MINERAL OIL MIST)

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

Date Issued: 12/08/95 Supersedes: 09/15/95

'AZARD IDENTIFICATION

EMERGENCY OVERVIEW

Appearance: Dark red liquid

Odor:

Not determined

WARNING STATEMENT

NONE CONSIDERED NECESSARY

HMIS

NFPA

Health: 0 Reactivity: 0 Health: 0 Reactivity: 0 Flammability: 1 Special : - Flammability: 1 Special : -

POTENTIAL HEALTH EFFECTS

EYE SKIN INHALATION INGESTION

Primary Route of Exposure: X X X

EFFECTS OF OVEREXPOSURE

Acute:

Eyes:

May cause minimal irritation, experienced as temporary discomfort.

Skin:

Brief contact is not irritating. Prolonged contact, as with clothing wetted with material, may cause defatting of skin or irritation, seen as local redness with possible mild discomfort.

Other than the potential skin irritation effects noted above, acute (short __arm) adverse effects are not expected from brief skin contact; see other effects, below, and Section 11 for information regarding potential long term effects.

Inhalation:

Vapors or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure in poorly ventilated areas or confined spaces, may cause irritation of the nose and throat, headache, nausea, and drowsiness.

PRODUCT	CODE:	W2324
NAME: MEI	ROPA 3	20

Date Issued: 12/08/95 Supersedes: 09/15/95

IAZARD IDENTIFICATION (CONT)

Ingestion:

If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur.

Sensitization Properties:

Unknown.

Chronic:

No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data.

Medical Conditions Aggravated by Exposure:

Because of its defatting properties, prolonged and repeated skin contact may aggravate an existing dermatitis (skin condition).

Other Remarks:

None

4. FIRST AID MEASURES

Eyes:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

more than several mouthfuls of this material are swallowed, give two _asses of water (16 oz.). Get medical attention.

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

 	PAC	3E: 4	
		N.A NOT APPLICABLE	
_ · · · · · · ·		- GREATER THAN	

PRODUCT	CODE:	W2324
NAME: MEI	ROPA 3	320

Date Issued: 12/08/95 Supersedes: 09/15/95

IRST AID MEASURES (CONT)

Other Instructions:

Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

5. FIRE-FIGHTING MEASURES

Ignition Temperature - AIT (degrees F):

Not determined.

Flash Point (degrees F):

420 (COC)

Flammable Limits (%):

Lower: Not determined.

Upper: Not determined.

Recommended Fire Extinguishing Agents And Special Procedures:
Use water spray, dry chemical, foam, or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.

Unusual or Explosive Hazards:

None

Special Protective Equipment for Firefighters:

No special equipment or procedures required.

6. ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage:
Ventilate area. Avoid breathing vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up.
Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

Date Issued: 12/08/95 Supersedes: 09/15/95

.CCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

If more than 6,218,905 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLA Section 101(14)).

7. HANDLING AND STORAGE

Precautions to be Taken in

Handling:

Minimum feasible handling temperatures should be maintained.

Storage:

Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin Protection:

Workers should wash exposed skin several times daily with soap and water.

Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection:

irborne concentrations should be kept to lowest levels possible. If apor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Adequate to meet component occupational exposure limits (see Section 2).

Exposure Limit for Total Product:

None established for product; refer to Section 2 for component exposure limits.

Date Issued: 12/08/95 Supersedes: 09/15/95

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Dark red liquid Odor: Not determined Boiling Point (degrees F): Not determined. Melting/Freezing point (degrees F): Not determined. Specific Gravity (water=1): .8973 pH of undiluted product: Not applicable. Vapor Pressure: Not determined. Viscosity: 315 cSt at 40.0 C **VOC Content:** Not determined. Vapor Density (air=1): Not determined. Solubility in Water (%): Not determined.

Other: None

-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2324	Date Issued: 12/08/95
NAME: MEROPA 320	Supersedes: 09/15/95
STABILITY AND REACTIVITY	
This Material Reacts Violently With: (If Others is checked below, see comm Air Water Heat Strong Oxidizers C X	nents for details) Others None of These
Comments: None Products Evolved When Subjected to Ho Toxic levels of carbon monoxide, carbon ketones. Hazardous Polymerizations: DO NOT O	n dioxide, irritating aldehydes and
11. TOXICOLOGICAL INFORMATION	
TOXICOLOGICAL INFORMATION(ANII Median Lethal Dose Oral: LD50 Believed to be > 5.00 g/kg (rat) Inhalation: Not determined. Dermal: LD50 Believed to be > 2.00 g/kg (rabb Irritation Index, Estimation of Irritation (rabin: Draize) Believed to be < .50 /8.0 (rab Eyes: (Draize) Believed to be < 15.00 /110 (Sensitization: Not determined. Other: None	practically non-toxic bit) practically non-toxic Species) bit) no appreciable effect
	OT APPLICABLE N.T NOT TESTED

•		
PRODUCT CODE: W2324 NAME: MEROPA 320	Date Issued: 12/08/95 Supersedes: 09/15/95	
DISPOSAL CONSIDERATIONS		
Waste Disposal Methods This product has been evaluated for RC the criteria of a hazardous waste if disca Under RCRA, it is the responsibility of the mine at the time of disposal, whether the hazardous waste. This is because produprocesses, etc. may render the resulting Remarks None	arded in its purchased form. he user of the product to deter- e product meets RCRA criteria for duct uses, transformations, mixtures,	
13. TRANSPORT INFORMATION		
Transportation DOT: Proper Shipping Name: Not regulated		
IMDG: Proper Shipping Name: Not evaluated ICAO: Proper Shipping Name: Not evaluated TDG: roper Shipping Name:		
Not evaluated		
14. REGULATORY INFORMATION		
Federal Regulations: SARA Title III: Section 302/304 Extremely Hazardous Seq. Chemical Name	Substances CAS Number Range in %	

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE - LESS THAN > - GREATER THAN N.T. - NOT TESTED

None

PRODUCT CODE: W2324	Date Issued: 12/08/95
NAME: MEROPA 320	Supersedes: 09/15/95
REGULATORY INFORMATIO	N (CONT)
Section 302/304 Extremely Haza Seq. TPQ RQ	ardous Substances (CONT)
None Section 311 Hazardous Categor Acute Chronic Fire Pressu	
Section 313 Toxic Chemical Chemical Name	CAS Number Concentration
None CERCLA 102(a)/DOT Hazardous Seq. Chemical Name	s Substances: (+ indicates DOT Hazardous Substance) CAS Number Range in %
01+ Toluene CERCLA/DOT Hazardous Subst Seq. RQ	108-88-3 0.01-0.09 ances (Sequence Numbers and RQ's):
Toxic Substance Control Act (TS	, are listed on or are exempt from the SCA) Chemical Substance Inventory.
or belong to classes of substance	nents of this product are substances, es, known to the State of California
to cause cancer and/or reproduc Chemical Name	tive toxicity. CAS Number
Toluene States Right-to-know Regulation	108-88-3 s:
PAGE: 1	0

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED < - LESS THAN > - GREATER THAN

PRODUCT CODE: W2324 Date Issued: 12/08/95 NAME: MEROPA 320 Supersedes: 09/15/95 REGULATORY INFORMATION (CONT) Chemical Name State Right-to-know Toluene CT,FL,IL,MA,NJ,PA,RI,MI CT,FL,IL,MA,NJ,PA,RI Isopropyl alcohol State list: CT (Connecticut), FL (Florida), IL (Illinois), MI (Michigan), LA (Louisiana), MA (Massachusetts), NJ (New Jersey), PA (Pennsylvania), RI (Rhode Island) International Regulations: Export Notification (TSCA-12b): This product may be subject to export notification under TSCA section 12(b); contains: Isopropyl alcohol WHMIS Classification: Not regulated Canada Inventory Status: Not determined. **EINECS Inventory Status:** Not determined. Australia Inventory Status: Not determined. Japan Inventory Status: 'ot determined. 15. ENVIRONMENTAL INFORMATION Aquatic Toxicity: Not determined.

Mobility:

Not determined.

Persistence and Biodegradability:

Not determined.

------ PAGE: 11-----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2324	Date Issued: 12/08/95
NAME: MEROPA 320	Supersedes: 09/15/95

ENVIRONMENTAL INFORMATION (CONT)

Potential to Bioaccumulate:

Not determined.

Remarks:

None

16. OTHER INFORMATION

Definitions of Terms:

OSHA - Occupational Safety and Health Administration (a regulatory and enforcement agency of safety and health in most United States industrial sectors; part of the United States Department of Labor.

PEL - Permissible Exposure Limit, OSHA workplace exposure limits for hazardous materials.

IARC - International Agency for Research on Cancer (part of the World Health Organization).

NTP - National Toxicology Program (overseen by the United States Department of Health and Human Services), develops tests for public health regulation of toxic chemicals.

ACGIH - American Conference of Government Industrial Hygienists, develops recommended exposure limits for chemical substances and physical agents. TLV - Threshold Limit Value, ACGIH term for the airborne concentration of a material to which nearly all healthy workers can be exposed without adverse effects.

TLV-STEL- Short-term exposure limit, for brief exposure. (15 minutes)

_V-TWA- Time weighted average concentration, for longer exposure (8 hours)

HMIS - Hazardous Materials Identification System, developed by the National Paint and Coatings Association; numbers assigned to indicate the degree of hazard, with 0 for least severe to 4 for most severe.

NFPA - National Fire Protection Association (an international organization

to promote fire prevention); a hazard rating system similar to HMIS.
THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT FOR PURPOSE OF HAZARD COMMUNICATION AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU

----- PAGE: 12**----**N.A. - NOT APPLICABLE N.T. - NOT TESTED N.D. - NOT DETERMINED < - LESS THAN > - GREATER THAN

DDADLIAT	CODE: W2324
	7 7 11 11 - (1007) 27 7 7
FINDUGAL	VVVIII VVVIIX
ALABAM AAM	
NAME MEI	ひというひ つつい
IVAIVIE IVIE	

Date Issued: 12/08/95 Supersedes: 09/15/95

OTHER INFORMATION (CONT)

ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.
TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Date: 12-08-95

New X Revised, Supersedes: 09-15-95

Inquiries regarding MSDS should be directed to:
Texaco Inc.
Manager, Product Safety
P.O. Box 509
Beacon, N.Y. 12508

PLEASE SEE NEXT PAGE FOR PRODUCT LABEL

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

Date Issued: 12/08/95 Supersedes: 09/15/95

PRODUCT LABEL

Label Date: 12-08-95

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

W2324 MEROPA 320

WARNING STATEMENT

NONE CONSIDERED NECESSARY PRECAUTIONARY MEASURES

-Avoid prolonged breathing of vapor, mist, or gas.

-Workers should wash exposed skin several times daily with soap and water.

FIRST AID

Eye Contact:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin Contact:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

' aestion:

__more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

innalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

Note to Physician:

None

FIRE

In case of fire, use water spray, dry chemical, foam or carbon dioxide. Water may cause frothing. Use water spray to cool fire-exposed containers.

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

Date Issued: 12/08/95 Supersedes: 09/15/95

PRODUCT LABEL (CONT)

Label Date: 12-08-95

If more than 6,218,905 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLÁ Section 101(14)). **Chemical Name** CAS Number Range in %

Solvent deasphalted residual oil

64741-95-3 65.00-79.99

Solvent dewaxed, heavy paraffinic petroleum 64742-65-0 20.00-34.99

distillate

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Pennsylvania Special Hazardous Substance(s) CAS Number

Range in %

None

HMIS

NFPA

Health: 0 Reactivity: 0

Health: 0 Reactivity: 0

Flammability: 1 Special : - Flammability: 1 Special : -

Transportation

DOT:

Proper Shipping Name:

Not regulated

AUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

------ PAGE: 15-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED < - LESS THAN > - GREATER THAN

Date Issued: 12/08/95 Supersedes: 09/15/95

PRODUCT LABEL (CONT)

Label Date: 12-08-95

Manufacturer's Name and Address: TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656 TRANSPORTATION EMERGENCY Company: (914) 831-3400

CHEMTREC: (800) 424-9300

HEALTH EMERGENCY Company: (914) 831-3400

TEXACO MATERIAL SAFETY DATA SHEET

This MSDS was printed utilizing access to Texaco's CD-ROM MSDS Database. Due to variations in printer dependent character styles, fonts and computer control codes, the appearance may differ from that of the centrally printed Texaco MSDS.

OTE: Read and understand Material Safety Data Sheet before handling or disposing of product.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY

Product Code and Name:

W2325 MEROPA 460

Chemical Name and/or Family or Description:

Gear Oils

Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

Telephone Numbers:

Transportation Emergency-Company : (914) 831-3400

CHEMTRÉC: (800) 424-9300

Health Emergency

-Company ´: (914) 831-3400 ance : (914) 838-7204

General MSDS Assistance

Technical Information -Fuels : (914) 838-7336

-Chemical : (512) 459-6543 -Lubricant/: (800) 782-7852

Antifreezes

-Additives: (713) 235-6278

-Solvents: (800) 876-3738

----- PAGE: 1-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED < - LESS THAN > - GREATER THAN

Date Issued: 12/08/95 Supersedes: 09/15/95

COMPOSITION/INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION. Product and/or Component(s) Carcinogenic According to:

OSHA IARC NTP OTHER NONE

Х

Composition: (Sequence Number and Chemical Name)

Seq. Chemical Name

CAS Number

Range in %

01 # Solvent deasphalted residual oil

64741-95-3 80.00-94.99

02 # Solvent dewaxed, heavy paraffinic petroleum 64742-65-0 3.00-9.99

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910,1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Exposure Limits referenced by Sequence Number in the Composition Section Seq. Limit

- ^{^1} 5 mg/m3 TWA-OSHA (MINERAL OIL MIST)
 - 5 mg/m3 TWA-ACGIH (MINERAL OIL MIST)
- 01 10 mg/m3 STEL ACGIH (MINERAL OIL MIST)
- 02 5 mg/m3 TWA-OSHA (MINERAL OIL MIST)02 5 mg/m3 TWA-ACGIH (MINERAL OIL MIST)
- 02 10 mg/m3 STEL ACGIH (MINERAL OIL MIST)

-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

Date Issued: 12/08/95 Supersedes: 09/15/95

JAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Appearance: Dark red liquid

Odor:

Not determined

WARNING STATEMENT

NONE CONSIDERED NECESSARY

HMIS

NFPA

Health:

Health: 0 Reactivity: 0 Health: 0 Reactivity: 0 Flammability: 1 Special : - Flammability: 1 Special : -

POTENTIAL HEALTH EFFECTS

EYE SKIN INHALATION INGESTION

Primary Route of Exposure: X X

EFFECTS OF OVEREXPOSURE

Acute:

Eyes:

May cause minimal irritation, experienced as temporary discomfort.

Brief contact is not irritating. Prolonged contact, as with clothing wetted with material, may cause defatting of skin or irritation, seen as local redness with possible mild discomfort.

Other than the potential skin irritation effects noted above, acute (short erm) adverse effects are not expected from brief skin contact; see other effects, below, and Section 11 for information regarding potential long term effects.

Inhalation:

Vapors or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure in poorly ventilated areas or confined spaces, may cause irritation of the nose and throat, headache, nausea, and drowsiness.

------ PAGE: 3-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED < - LESS THAN > - GREATER THAN

PRODUCT	CODE:	W2325
NAME: MEI	ROPA 4	60

Date Issued: 12/08/95 Supersedes: 09/15/95

HAZARD IDENTIFICATION (CONT)

Ingestion:

If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur.

Sensitization Properties:

Unknown.

Chronic:

No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data.

Medical Conditions Aggravated by Exposure:

Because of its defatting properties, prolonged and repeated skin contact may aggravate an existing dermatitis (skin condition).

Other Remarks:

None

4. FIRST AID MEASURES

Eyes:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

'`more than several mouthfuls of this material are swallowed, give two _asses of water (16 oz.). Get medical attention.

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

PAG	6E: 4	
N.D NOT DETERMINED	N.A NOT APPLICABLE	N.T NOT TESTED
< - LESS THAN >	- GREATER THAN	

Date Issued: 12/08/95 Supersedes: 09/15/95

FIRST AID MEASURES (CONT)

Other Instructions:

Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

5. FIRE-FIGHTING MEASURES

Ignition Temperature - AIT (degrees F):

Not determined.

Flash Point (degrees F):

475 (COC)

Flammable Limits (%):

Lower: Not determined. Upper: Not determined.

Recommended Fire Extinguishing Agents And Special Procedures:
Use water spray, dry chemical, foam, or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.

Unusual or Explosive Hazards:

None

Special Protective Equipment for Firefighters:

No special equipment or procedures required.

6. ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage:
Ventilate area. Avoid breathing vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

Date Issued: 12/08/95 Supersedes: 09/15/95

ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

If more than 6,218,905 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLA Section 101(14)).

7. HANDLING AND STORAGE

Precautions to be Taken in

Handling:

Minimum feasible handling temperatures should be maintained.

Storage:

Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin Protection:

Workers should wash exposed skin several times daily with soap and water.

Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If apor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Adequate to meet component occupational exposure limits (see Section 2).

Exposure Limit for Total Product:

None established for product; refer to Section 2 for component exposure limits.

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED CONTROL
PRODUCT CODE: W2325	
FRODUCT CODE, W2323	L
NAME: MEROPA 460	Cum
NAME. MEROPA 400	Sup

Date Issued: 12/08/95 persedes: 09/15/95

PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Dark red liquid Odor: Not determined Boiling Point (degrees F): Not determined. Melting/Freezing point (degrees F): Not determined. Specific Gravity (water=1): .903 pH of undiluted product: Not applicable. Vapor Pressure: Not determined. Viscosity: 450 cSt at 40.0 C **VOC Content:** Not determined. Vapor Density (air=1): Not determined. Solubility in Water (%): Not determined.

Other: None

------ PAGE: 7-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

DOOD LOT OODE WOOD	D 1 10/00/05
PRODUCT CODE: W2325 NAME: MEROPA 460	Date Issued: 12/08/95 Supersedes: 09/15/95
STABILITY AND REACTIVITY	
This Material Reacts Violently With: (If Others is checked below, see com Air Water Heat Strong Oxidizers X	
Comments: None Products Evolved When Subjected to Toxic levels of carbon monoxide, carb ketones. Hazardous Polymerizations: DO NOT	oon dioxide, irritating aldehydes and
11. TOXICOLOGICAL INFORMATION	
TOXICOLOGICAL INFORMATION(AN Median Lethal Dose Oral: LD50 Believed to be > 5.00 g/kg (rat Inhalation: Not determined. Dermal: LD50 Believed to be > 2.00 g/kg (rat Irritation Index, Estimation of Irritation Skin: Draize) Believed to be < .50 /8.0 (rat Eyes: (Draize) Believed to be < 15.00 /110 Sensitization: Not determined. Other: None	bbit) practically non-toxic (Species) abbit) no appreciable effect
	NOT APPLICABLE N.T NOT TESTED

PRODUCT CODE: W2325 NAME: MEROPA 460	Date Issued: 12/08/95 Supersedes: 09/15/95
DISPOSAL CONSIDERATIONS	
the criteria of a hazardous waste in Under RCRA, it is the responsibility mine at the time of disposal, whether	y of the user of the product to deter- ner the product meets RCRA criteria for e product uses, transformations, mixtures,
13. TRANSPORT INFORMATION	
Transportation DOT: Proper Shipping Name: Not regulated	
IMDG: Proper Shipping Name: Not evaluated ICAO: Proper Shipping Name: Not evaluated TDG:	
roper Shipping Name: Not evaluated	
14. REGULATORY INFORMATION	T
Federal Regulations: SARA Title III: Section 302/304 Extremely Hazar Seq. Chemical Name	rdous Substances CAS Number Range in %

None

PRODUCT CODE: W2325 Date Issued: 12/08/95 NAME: MEROPA 460 Supersedes: 09/15/95 REGULATORY INFORMATION (CONT) Section 302/304 Extremely Hazardous Substances (CONT) Seq. TPQ None Section 311 Hazardous Categorization: Acute Chronic Fire Pressure Reactive N/A Section 313 Toxic Chemical **Chemical Name** CAS Number Concentration None CERCLA 102(a)/DOT Hazardous Substances: (+ indicates DOT Hazardous Substance) Seq. Chemical Name CAS Number Range in % 108-88-3 0.01-0.09 01+ Toluene CERCLA/DOT Hazardous Substances (Sequence Numbers and RQ's): Seq. RQ 01+ 1000 TSCA Inventory Status: This product, or its components, are listed on or are exempt from the Toxic Substance Control Act (TSCA) Chemical Substance Inventory. ^ther: .ot evaluated. State Regulations: California Proposition 65: The following detectable components of this product are substances, or belong to classes of substances, known to the State of California to cause cancer and/or reproductive toxicity. Chemical Name CAS Number 108-88-3 Toluene States Right-to-know Regulations: ----- PAGE: 10-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W2325 Date Issued: 12/08/95 NAME: MEROPA 460 Supersedes: 09/15/95 REGULATORY INFORMATION (CONT) Chemical Name State Right-to-know Toluene CT,FL,IL,MA,NJ,PA,RI,MI CT,FL,IL,MA,NJ,PA,RI Isopropyl alcohol State list: CT (Connecticut), FL (Florida), IL (Illinois), MI (Michigan), LA (Louisiana), MA (Massachusetts), NJ (New Jersey), PA (Pennsylvania), RI (Rhode Island) International Regulations: Export Notification (TSCA-12b): This product may be subject to export notification under TSCA section 12(b); contains: Isopropyl alcohol WHMIS Classification: Not regulated Canada Inventory Status: Not determined. **EINECS Inventory Status:** Not determined. Australia Inventory Status: Not determined. Japan Inventory Status: Not determined. 15. ENVIRONMENTAL INFORMATION Aquatic Toxicity: Not determined.

Mobility:

Not determined.

Persistence and Biodegradability:

Not determined.

----- PAGE: 11-----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

•		
PRODUCT CODE: W2325	Date Issued: 12/08/95	
NAME: MEROPA 460	Supersedes: 09/15/95	
ENVIRONMENTAL INFORMATIO	N (CONT)	
<u> </u>		
Potential to Bioaccumulate: Not determined.		
Remarks:		
None		
16. OTHER INFORMATION		
Definitions of Terms:		
OSHA - Occupational Safety and Hea		
enforcement agency of safety and he	ealth in most United States industrial	
sectors; part of the United States De		
PEL - Permissible Exposure Limit, O	SHA workplace exposure ilmits for	
hazardous materials. IARC - International Agency for Rese	earch on Consor (nort of the Morld	
Health Organization).	arch on Cancer (part of the world	
	overseen by the United States Department	
	elops tests for public health regulation	
of toxic chemicals.	slops tests for public fleatin regulation	
	overnment Industrial Hygienists, develops	
	emical substances and physical agents.	
	term for the airborne concentration of a	
	orkers can be exposed without adverse	
effects.	•	
TLV-STEL- Short-term exposure limit	t, for brief exposure. (15 minutes)	
	oncentration, for longer exposure (8 hours)	
HMIS - Hazardous Materials Identific		
	tion; numbers assigned to indicate the	
degree of hazard, with 0 for least sev		
NFPA - National Fire Protection Asso		
to promote fire prevention): a hazard	rating system similar to HMIS	

degree of hazard, with 0 for least severe to 4 for most severe.

NFPA - National Fire Protection Association (an international organization to promote fire prevention); a hazard rating system similar to HMIS.

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT FOR PURPOSE OF HAZARD COMMUNICATION AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU

P	RODU	JCT	CODE	: W2325
N	AME:	MEI	ROPA	460

Date Issued: 12/08/95 Supersedes: 09/15/95

OTHER INFORMATION (CONT)

ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Date: 12-08-95

New X Revised, Supersedes: 09-15-95

Inquiries regarding MSDS should be directed to: Texaco Inc. Manager, Product Safety

P.O. Box 509

Beacon, N.Y. 12508

PLEASE SEE NEXT PAGE FOR PRODUCT LABEL

Date Issued: 12/08/95 Supersedes: 09/15/95

'. PRODUCT LABEL

Label Date: 12-08-95

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

W2325 MEROPA 460

WARNING STATEMENT

NONE CONSIDERED NECESSARY PRECAUTIONARY MEASURES

-Avoid prolonged breathing of vapor, mist, or gas.

-Workers should wash exposed skin several times daily with soap and water.

FIRST AID

Eve Contact:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin Contact:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

Note to Physician:

None

FIRE

In case of fire, use water spray, dry chemical, foam or carbon dioxide. Water may cause frothing. Use water spray to cool fire-exposed containers.

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED < - LESS THAN > - GREATER THAN PRODUCT CODE: W2325 Date Issued: 12/08/95 NAME: MEROPA 460 Supersedes: 09/15/95

*. PRODUCT LABEL (CONT)

Label Date: 12-08-95

If more than 6,218,905 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLA Section 101(14)).

Chemical Name CAS Number Range in %

Solvent deasphalted residual oil 64741-95-3 80.00-94.99

Solvent dewaxed, heavy paraffinic petroleum 64742-65-0 3.00-9.99 distillate

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910,1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST.

Pennsylvania Special Hazardous Substance(s) CAS Number Range in %

None

HMIS NFPA

Health: 0 Reactivity: 0 Health: 0 Reactivity: 0 Flammability: 1 Special : - Flammability: 1 Special : -

Transportation

DOT:

Proper Shipping Name:

Not regulated

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

Date Issued: 12/08/95 Supersedes: 09/15/95

7. PRODUCT LABEL (CONT)

Label Date: 12-08-95

Manufacturer's Name and Address: TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656 TRANSPORTATION EMERGENCY Company: (914) 831-3400

CHEMTREC: (800) 424-9300

Company: (914) 831-3400 HEALTH EMERGENCY

TEXACO MATERIAL SAFETY DATA SHEET

This MSDS was printed utilizing access to Texaco's CD-ROM MSDS Database. Due to variations in printer dependent character styles, fonts and computer ntrol codes, the appearance may differ from that of the centrally printed xaco MSDS.

NOTE: Read and understand Material Safety Data Sheet before handling or disposing of product.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MATERIAL IDENTITY

Product Code and Name:

W0715 REGAL OIL R&O 150

Chemical Name and/or Family or Description:

Turbine Oils

Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

Telephone Numbers:

Transportation Emergency-Company : (914) 831-3400

CHEMTREC: (800) 424-9300

Health Emergency -Company : (914) 831-3400

General MSDS Assistance : (914) 838-7204 Technical Information -Fuels : (914) 838-7336

Chemical : (512) 459-6543-

-Lubricant/: (800) 782-7852

Antifreezes

-Additives: (713) 235-6278 -Solvents: (800) 876-3738

PAGE: 1					
· · · · · · · · · · · · · · · · · · ·					
NI I	D NOT DETERMIN	⊏⊓	N.A NOT APPLICABLE	N T - NOT TESTED	
14.	D NOT DETERMIN		N.A NOT ALL LICABLE	N.I NOI ILOILD	
<	- LESS THAN	>	- GREATER THAN		
-	- LLOG HIMN		- ONEA: EN HIAN		

PRODUCT CODE: W0715 NAME: REGAL OIL R&O 150 Date Issued: 12/08/95 Supersedes: 09/15/95

COMPOSITION/INFORMATION ON INGREDIENTS

THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CARCINOGENS ARE LISTED WHEN PRESENT AT 0.1 % OR GREATER; COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORDING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OR GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION.

Product and/or Component(s) Carcinogenic According to:

OSHA IARC NTP OTHER NONE

Composition: (Sequence Number and Chemical Name)

Seq. Chemical Name

CAS Number

Range in %

01 # Solvent dewaxed, heavy paraffinic petroleum 64742-65-0 65.00-79.99 distillate

02 # Solvent deasphalted residual oil

64741-95-3 20.00-34.99

PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200).

COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL

Exposure Limits referenced by Sequence Number in the Composition Section Seq. Limit

 $\overline{01}$ 5 ma/m3 TWA-OSHA (MINERAL OIL MIST)

5 mg/m3 TWA-ACGIH (MINERAL OIL MIST)

Ծ1 mg/m3 STEL ACGIH (MINERAL OIL MIST) 10

02 5 mg/m3 TWA-OSHA (MINERAL OIL MIST)

02 mg/m3 TWA-ACGIH (MINERAL OIL MIST)

02 mg/m3 STEL ACGIH (MINERAL OIL MIST)

-- PAGE: 2-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN PRODUCT CODE: W0715 NAME: REGAL OIL R&O 150 Date Issued: 12/08/95 Supersedes: 09/15/95

HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Appearance: Light pale liquid

Odor:

Not determined

WARNING STATEMENT

NONE CONSIDERED NECESSARY

HMIS

NFPA

Health: 0 Reactivity: 0 Health: 0 Reactivity: 0 Flammability: 1 Special : - Flammability: 1 Special : -

POTENTIAL HEALTH EFFECTS

EYE SKIN INHALATION INGESTION

Primary Route of Exposure: X X X

EFFECTS OF OVEREXPOSURE

Acute:

Eyes:

May cause minimal irritation, experienced as temporary discomfort.

Skin:

Brief contact is not irritating. Prolonged contact, as with clothing wetted with material, may cause defatting of skin or irritation, seen as local redness with possible mild discomfort.

Other than the potential skin irritation effects noted above, acute (short erm) adverse effects are not expected from brief skin contact; see other effects, below, and Section 11 for information regarding potential long term effects.

Inhalation:

Vapors or mist, in excess of permissible concentrations, or in unusually high concentrations generated from spraying, heating the material or as from exposure in poorly ventilated areas or confined spaces, may cause irritation of the nose and throat, headache, nausea, and drowsiness.

PRODUCT CODE: W0715
PRUDUCT CODE VVO/ 15
NAME: REGAL OIL R&O 150
NAME REGALOH RAO 150
IN MILE. INCOME OIL MAD 100

Date Issued: 12/08/95 Supersedes: 09/15/95

HAZARD IDENTIFICATION (CONT)

Ingestion:

If more than several mouthfuls are swallowed, abdominal discomfort, nausea, and diarrhea may occur.

Sensitization Properties:

Unknown.

Chronic:

No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data.

Medical Conditions Aggravated by Exposure:

Because of its defatting properties, prolonged and repeated skin contact may aggravate an existing dermatitis (skin condition).

Other Remarks:

Material from high pressure equipment, pinhole leaks, or high pressure line failure can penetrate the skin and, if not properly treated, can cause severe injury, including disfigurement, loss of function, or even require amputation of the affected area. To prevent such serious injury, immediate medical attention should be sought even if the injection injury appears to be minor.

4. FIRST AID MEASURES

Eyes:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

"in:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

Ingestion:

If more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

		PΔ(GF· 4	
			5 ,	
N.	D NOT DETERMI	NED	N.A NOT APPLICABLE	N.I NOI IESIED
<	- LESS THAN	>	- GREATER THAN	

PRODUCT CODE: W0715 NAME: REGAL OIL R&O 150

Date Issued: 12/08/95 Supersedes: 09/15/95

FIRST AID MEASURES (CONT)

Inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

Other Instructions:

High pressure injection of material can cause severe injury. Failure to debride the wound of all residual material can result in disfigurement, loss of function, or may require amputation of the affected area. Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry cleaning of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

5. FIRE-FIGHTING MEASURES

Ignition Temperature - AIT (degrees F):

Not determined.

Flash Point (degrees F):

460 (COC)

Flammable Limits (%):

Lower: Not determined.

Upper: Not determined.

Decommended Fire Extinguishing Agents And Special Procedures:

Jse water spray, dry chemical, foam, or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.

Unusual or Explosive Hazards:

None

Special Protective Equipment for Firefighters:

No special equipment or procedures required.

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED
< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715 NAME: REGAL OIL R&O 150

Date Issued: 12/08/95 Supersedes: 09/15/95

ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage:
Ventilate area. Avoid breathing vapor. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up.
Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

7. HANDLING AND STORAGE

Precautions to be Taken in

Handling:

Minimum feasible handling temperatures should be maintained.

Storage:

Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin Protection:

Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Adequate to meet component occupational exposure limits (see Section 2).

		PAG	BE: 6	
			- · ·	
NI I		NED	N.A NOT APPLICABLE	NIT NOT TESTED
14.1	J NOT DETERMI	INED	N.A. • NOT AFFLICABLE	N.INOLIEGIED
_	- LESS THAN	~	- GREATER THAN	
•	- LEGG I FIAN	_	- GREATER THAIN	

PRODUCT CODE: W0715	Date Issued: 12/08/95
NAME: REGAL OIL R&O 150	Supersedes: 09/15/95
EXPOSURE CONTROLS/PERSONA	L PROTECTION (CONT)
Exposure Limit for Total Product:	
None established for product; refer to exposure limits.	Section 2 for component
9. PHYSICAL AND CHEMICAL PROPE	RTIES
Appearance:	
Light pale liquid	
Odor:	
Not determined	
Boiling Point (degrees F):	
Not determined.	
Melting/Freezing point (degrees F):	
Not applicable.	
Specific Gravity (water=1): .8843	
pH of undiluted product:	
Not applicable.	
Vapor Pressure: Not determined.	
Viscosity:	
141.5 cSt at 40.0 C	
VOC Content:	
Not determined.	
upor Density (air=1):	
Not determined.	
Solubility in Water (%):	
Not determined.	
Other: None	
DAGE: 7	
NOT DETERMINED NA N	OT APPLICABLE N.T NOT TESTED
N.D NOT DETERMINED N.A N < - LESS THAN > - GREATE	

ועטאכ	JCT COI		715
NODU		DE. VYU	110
ハヘアルビ・	REGAL	OII DS	0.150
AVIAIT.	IVEQUE	OIL 1/0	(C 100

Date Issued: 12/08/95 Supersedes: 09/15/95

` STABILITY AND REACTIVITY

This Material Reacts Violently With:

(If Others is checked below, see comments for details)

Air Water Heat Strong Oxidizers Others None of These

Comments:

None

Products Evolved When Subjected to Heat or Combustion:

Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and

ketones.

Hazardous Polymerizations: DO NOT OCCUR

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION(ANIMAL TOXICITY DATA)

Median Lethal Dose

Oral:

LD50 Similar product > 10.00 g/kg (rat) practically non-toxic

Inhalation:

Not determined.

Dermal:

LD50 Similar product > 8.00 g/kg (rabbit) practically non-toxic

Irritation Index, Estimation of Irritation (Species)

Skin:

(Draize) Similar product .13 /8.0 (rabbit) no appreciable effect

Êves:

(Draize) Similar product 2.33 /110 (rabbit) no appreciable effect

Sensitization:

Not determined.

Other:

None

------PAGE: 8-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

•	
PRODUCT CODE: W0715	Data January 12/09/05
NAME: REGAL OIL R&O 150	Date Issued: 12/08/95 Supersedes: 09/15/95
DISPOSAL CONSIDERATIONS	
Waste Disposal Methods This product has been evaluated for RC the criteria of a hazardous waste if disca Under RCRA, it is the responsibility of the mine at the time of disposal, whether the hazardous waste. This is because producesses, etc. may render the resulting Remarks None	arded in its purchased form. ne user of the product to deter- e product meets RCRA criteria for luct uses, transformations, mixtures,
13. TRANSPORT INFORMATION	
Transportation DOT: Proper Shipping Name: Not regulated	
IMDG: Proper Shipping Name: Not evaluated ICAO: Proper Shipping Name: Not evaluated *DG: 'roper Shipping Name: Not evaluated Not evaluated	
14. REGULATORY INFORMATION	
Federal Regulations: SARA Title III: Section 302/304 Extremely Hazardous Seq. Chemical Name	Substances CAS Number Range in %
None	

------ PAGE: 9-----

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED < - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715 Date Issued: 12/08/95 NAME: REGAL OIL R&O 150 Supersedes: 09/15/95 . REGULATORY INFORMATION (CONT) Section 302/304 Extremely Hazardous Substances (CONT) Sea. TPQ None Section 311 Hazardous Categorization: Acute Chronic Fire Pressure Reactive N/A Section 313 Toxic Chemical Chemical Name Concentration CAS Number None CERCLA 102(a)/DOT Hazardous Substances: (+ indicates DOT Hazardous Substance) Seq. Chemical Name CAS Number Range in % None CERCLA/DOT Hazardous Substances (Sequence Numbers and RQ's): Seq. RQ None TSCA Inventory Status: This product, or its components, are listed on or are exempt from the Toxic Substance Control Act (TSCA) Chemical Substance Inventory. Other: lot evaluated. State Regulations: California Proposition 65: The following detectable components of this product are substances, or belong to classes of substances, known to the State of California to cause cancer and/or reproductive toxicity. CAS Number Chemical Name None States Right-to-know Regulations: ------ PAGE: 10-----

N.T. - NOT TESTED

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715	Date Issued: 12/08/95
NAME: REGAL OIL R&O 150	Supersedes: 09/15/95
. REGULATORY INFORMATIO	N (CONT)
Chemical Name	State Right-to-know
None	
State list: CT (Connecticut), FL (F LA (Louisiana), MA (Mass PA (Pennsylvania), RI (Rh	achusetts), NJ (New Jersey),
International Regulations: WHMIS Classification: Not regulated Canada Inventory Status: Not determined. EINECS Inventory Status: Not determined. Australia Inventory Status: Not determined. Japan Inventory Status: Not determined. Journal of the status of	
15. ENVIRONMENTAL INFORMA	TION
Aquatic Toxicity: Not determinedbility: Not determined. Persistence and Biodegradability: Not determined. Potential to Bioaccumulate: Not determined.	
PAGE: 1	1
N.D NOT DETERMINED N./ < - LESS THAN > - GR	A NOT APPLICABLE N.T NOT TËSTED EATER THAN

•	
PRODUCT CODE: W0715	Date Issued: 12/08/95
NAME: REGAL OIL R&O 150	Supersedes: 09/15/95
T. ENVIRONMENTAL INFORMATION (CONT)	
Remarks:	
None	
16. OTHER INFORMATION	
Definitions of Terms:	
OSHA - Occupational Safety and Health Adminis	
enforcement agency of safety and health in mos	t United States industrial
sectors; part of the United States Department of PEL - Permissible Exposure Limit, OSHA workpl	Labor. ace exposure limits for
hazardous materials.	ace exposure infines for
IARC - International Agency for Research on Ca	ncer (part of the World
Health Organization).	
NTP - National Toxicology Program (overseen b	y the United States Department
of Health and Human Services), develops tests for toxic chemicals.	or public nealth regulation
ACGIH - American Conference of Government li	ndustrial Hygienists, develops
recommended exposure limits for chemical subs	tances and physical agents.
TLV - Threshold Limit Value, ACGIH term for the	
material to which nearly all healthy workers can	be exposed without adverse
effects. TLV-STEL- Short-term exposure limit, for brief exposure limit	vnosure (15 minutes)
TLV-TWA- Time weighted average concentration	
HMIS - Hazardous Materials Identification System	
ational Paint and Coatings Association; numbe	
degree of hazard, with 0 for least severe to 4 for	
NFPA - National Fire Protection Association (an	
to promote fire prevention); a hazard rating syste THE INFORMATION CONTAINED HEREIN IS B	
	DUCT FOR PURPOSE OF HAZARD COMMUNICATION
	ROGRAM. IT IS NOT INTENDED TO CONSTITUTE
	THE PRODUCT. NO EXPRESS WARRANTY, OR
	OR FITNESS FOR A PARTICULAR PURPOSE IS
	THE INFORMATION CONTAINED HEREIN. DATA RODUCTS. YOU ARE URGED TO OBTAIN DATA
	BUY, PROCESS, USE OR DISTRIBUTE AND YOU
	VISE THOSE WHO MAY COME IN CONTACT WITH
SUCH PRODUCTS OF THE INFORMATION CO	

PRODU			MINTAR	
PRUNN	16 2 1 1 1	.()) — :	VVII / 15	1
	, , ,	VUL.	****	,
VIV K4F-	$\mathbf{D} = \mathbf{C} \cdot \mathbf{C}$	וורא ומ	יוזעט	IEN
NAME:	IVEO		. Γαυ	I UU

Date Issued: 12/08/95 Supersedes: 09/15/95

. OTHER INFORMATION (CONT)

TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Date: 12-08-95

New X Revised, Supersedes: 09-15-95

Inquiries regarding MSDS should be directed to:
Texaco Inc.
Manager, Product Safety
P.O. Box 509
Beacon, N.Y. 12508
PLEASE SEE NEXT PAGE FOR PRODUCT LABEL

N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

< - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715 Date Issued: 12/08/95 NAME: REGAL OIL R&O 150 Supersedes: 09/15/95

PRODUCT LABEL

Label Date: 12-08-95

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS. W0715 REGAL OIL R&O 150

WARNING STATEMENT

NONE CONSIDERED NECESSARY PRECAUTIONARY MEASURES

-Avoid prolonged breathing of vapor, mist, or gas.

-Workers should wash exposed skin several times daily with soap and water.

FIRST AID

Eve Contact:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists.

Skin Contact:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists. Indestion:

more than several mouthfuls of this material are swallowed, give two glasses of water (16 oz.). Get medical attention.

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get medical attention if breathing becomes difficult or respiratory irritation persists.

Note to Physician:

High pressure injection of material can cause severe injury. Failure to debride the wound of all residual material can result in disfigurement. loss of function, or may require amputation of the affected area.

FIRE

In case of fire, use water spray, dry chemical, foam or carbon dioxide. Water may cause frothing. Use water spray to cool fire-exposed containers.

----- PAGE: 14-----N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED < - LESS THAN > - GREATER THAN

PRODUCT CODE: W0715 Date Issued: 12/08/95 NAME: REGAL OIL R&O 150 Supersedes: 09/15/95 *. PRODUCT LABEL (CONT) Label Date: 12-08-95 Chemical Name CAS Number Range in % 64742-65-0 65.00-79.99 Solvent dewaxed, heavy paraffinic petroleum distillate Solvent deasphalted residual oil 64741-95-3 20.00-34.99 PRODUCT IS NON-HAZARDOUS ACCORDING TO OSHA (1910.1200). # COMPONENT, BY DEFINITION, IS CONSIDERED HAZARDOUS ACCORDING TO OSHA BECAUSE IT CARRIES THE PERMISSIBLE EXPOSURE LIMIT (PEL) FOR MINERAL OIL MIST. Pennsylvania Special Hazardous Substance(s) CAS Number Range in % None **HMIS NFPA** Health: 0 Reactivity: 0 Health: 0 Reactivity: 0 Flammability: 1 Special : - Flammability: 1 Special : -Transportation DOT: **Proper Shipping Name:** Not regulated CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place. Manufacturer's Name and Address:

TEXACO INDUSTRIES INC.

P.O. Box 3666

Guayanilla, Puerto Rico 00656

TRANSPORTATION EMERGENCY Company: (914) 831-3400

CHEMTREC: (800) 424-9300

HEALTH EMERGENCY Company: (914) 831-3400



)	MATERIAL SAFETY DATA SHEET
/	WELCO 1620 ANTI SPATTER
VERSION DATE 1/3/96	PRINT DATE 1/3/90
SECTION 1	PRODUCT IDENTIFICATION
COMPANY ADDRESS	
EMERGENCY PHONE NUMBER	KINGS MOUNTAIN, NC 28086
MSDS VERSION NUMBER	(00)-424-8300
TRADE NAME	WELCO 1820 ANTI SPATTER
+AZARO RATING (HMIS)	LENTILO
HAZARO KATING (HMIS)	REACTIVITY-1
	FLAMMABILITY-1
	OTHER-2
HMIS DESIGNATED KEY	4-SEVERE HAZARD
	3-SERIOUS HAZARD
	2-MODERATE HAZARD
	1-SLIGHT HAZARD 0-MINIMAL HAZARD
	CHANNAL PAZARD
SECTION 2	HAZARDOUS COMPONENTS
MATERIAL METHYLENE CHLORIDE	% RY WEIGHT CAS HUMBER AGENTLY MANACH SEC 313 73-84 75-09-2 SO PPM (SWTWA) YES
CARBON DIOXIDE	17 124-36-9 5000PPM NO
SECTION 3	PHYSICAL PROPERTIES
BOILING POINT	
MELTING POINT	NA
VAPOR PRESSURE	
VAPOR DENSITY (AIR≃1)	
SOLUBILITY IN WATER	
SPECIFIC GRAVITY	1.32 (H20=1)
EVAPORATION RATE	
APPEARANCE AND ODON	CLEAR, COLORLESS LIQUID, CHARACTERISTIC ODOR.
SECTION 4	FIRE AND EXPLOSION DATA(METHOD USED) NONE TO BOILING
FLASH POINT	(METHOD USED) NONE TO BOILING
	DRY CHEMICAL, CARBON DIOXIDE, OR FOAM
SPECIAL PROCEDURES	PRESSURE DEMAND, SELF CONTAINED RESPIRATORY PROTECTION
MILIEURI MATADRO	SHOULD BE PROVIDED TO FIRE FIGHTERS STORAGE CONTAINERS EXPOSED TO FIRE SHOULD BE KEPT COOL. A
UNUSUAL PRZARDS	HIGH TEMPERATURES, OVER-PRESSURIZATION OF CONTAINER CAN
	RESULT IN FIRE. VAPORS ARE HEAVIER THAN AIR AND MAY
	ACCUMULATE IN LOW AREAS
SECTION 5	REACTIVITY DATA
ABILITY	
	HIGH PRESSURE IN ALUMINUM SYSTEMS. AVOID OPEN FLAMES OR
1	ELECTRICAL ARCS.
-IAZARDOUS POLYMERIZATION	
NCOMPATIBILITY	AVOID CONTACT WITH DXYGEN, NITROGEN, PEROXIDE, OXIDIZERS AN
JAZA DOOLIE DECOMBO SITIOM DOODLICT	REACTIVE METALS (I.E. ALUMINUM, POTASSIUM, SODIUM, ETC.) S
	S
SECTION 6	HEALTH HAZARO DATA
	INHALATION, SKIN, INGESTION
HEALIH HAZARDS	ACUTE EXCESSIVE INHALATION AND INGESTION MAY PRODUCE
	SYMPTOMS OF LIGHT HEADEDNESS TO UNCONSCIOUSNESS TO
	DEATH. EXPOSURE OF SKIN AND EYE MAY PRODUCE IRRITATION. CHRONIC HEADACHE, FATIGUE, NAUSEA, DEPRESSION AND VISUAL
	DISTURBANCE, HIGH LEVELS MAY CAUSE CARDIAC ARRYTHMIAS.
	EXCESSIVE EXPOSURE MAY CAUSE IRRITATION TO UPPER
	RESPIRATORY TRACT. EXCESSIVE EXPOSURE MAY ALSO CAUSE CARBOXYHEMOGLOBINEMIA.
CARCINOGENICITY	RESPIRATORY TRACT. EXCESSIVE EXPOSURE MAY ALSO CAUSE CARBOXYHEMOGLOBINEMIA.
CARCINOGENICITY	RESPIRATORY TRACT. EXCESSIVE EXPOSURE MAY ALSO CAUSE CARBOXYHEMOGLOBINEMIA.
	RESPIRATORY TRACT. EXCESSIVE EXPOSURE MAY ALSO CAUSE CARBOXYHEMOGLOBINEMIA. THE STATE OF CALIFORNIA REQUIRES THE FOLLOWING INFORMATION WARNING: THIS PRODUCTS CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER
IGNS & SYMPTOMS OF EXPOSURE	RESPIRATORY TRACT. EXCESSIVE EXPOSURE MAY ALSO CAUSE CARBOXYHEMOGLOBINEMIA. THE STATE OF CALIFORNIA REQUIRES THE FOLLOWING INFORMATION WARNING: THIS PRODUCTS CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER LIGHT HEADEDNESS AND NAUSEA. IRRITATING TO SKIN AND EYES.
IGNS & SYMPTOMS OF EXPOSURE	RESPIRATORY TRACT. EXCESSIVE EXPOSURE MAY ALSO CAUSE CARBOXYHEMOGLOBINEMIA. THE STATE OF CALIFORNIA REQUIRES THE FOLLOWING INFORMATION WARNING: THIS PRODUCTS CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER

MATERIAL SAFETY DATA SHEET

Identity: Eyesaline Bolut	tion - Part #'s 1050, 400, 40	01, 500	, 501, 502, 50	04, 505, 506	, 507, 508, 510, 51	2, 520, 533, 534	
Section I							
Manufacturer: Fendall Company			Emergency	Telephone: 84	47-57 7- 7400		
Address: 5 East College Drive			Information	n Telephone: 8	300-543-4842		
Arlington Heights, IL 60004			Date Prepa	red: 01/22/96			
Section II - Hazardous I	ngredients/Identity Infor	mation					
Hazardous Components			OSHA	ACGIH	Other limits	% (optional)	
(Specific Chemical Identity; C BENZALKONIUM CHLORIDE CA			PEL NONE	NONE NONE	recommended N/A	<0.1%	
Section III - Physical/Chemica		deli Edil	Ti Hone	There			
Boiling Point: 212° F (100° C)	to the Market School of the control of the second	Speci	fic Gravity (H2	O)=1: NOT D	ETERMINED		
Vapor Pressure (mm Hg.): 76		_	ng Point: N/A				
Vapor Density (Air = 1): NOT			Evaporation Rate (Butyl Acetate = 1): NOT DETERMINED				
Solubility in Water: 100%						<u>-</u>	
	ORLESS LIQUID WITH NO DIS	CERNA	BLE ODOR.	 n			
Section IV - Fire and Explosio							
Flash Point (Method Used): N	I/A	Flam	mable Limits:	<u>C.C. Perturbier in die die d</u>	LEL: N/A	UEL: N/A	
Extinguishing Media: THIS I	S A NONFLAMMABLE AQUI	EOUS S	OLUTION				
Special Fire Fighting Procedu							
Unusual Fire and Explosion H	lazards: N/A			_			
Section V - Reactivity Data							
Stability	Unstable: NO	C	onditions to Av	oid: THIS PRO	DDUCT IS STABLE C	ONSIDERED NON-	
·	Stable: YES				DER NORMAL COND	ITIONS OF	
Incompatibility (Materials to a	Avoidy MONE KNOWN	S	TORAGE AND	USAGE.			
Hazardous Decomposition or I	-						
Hazardous Decomposition of	May Occur: NO	10	onditions to Av	oid: NOME			
Polymerization	Will Not Occur: YES	`	onditions to Av	old. NONE			
Section VI - Health Hazard Da	ata						
Route(s) of Entry: Inhalation	on? NO Skin? NO Inge	stion? Y	/ES				
Health Hazards (Acute and Cl	hronic): INGESTION OF VOLU	JMES IN	NEXCESS OF 2	0 LITERS MA	Y CAUSE GASTRIC I	RRITATION	
Carcinogenicity: NTP? NO	IARC Monographs? NO	O	SHA Regulated	d? NO			
Signs and Symptoms of Expos	ure: N/A	_					
Medical Conditions Generally	Aggravated by Exposure: N/A						
	res: NOTES TO PHYSICIAN: VOMITING AND OBSERVE T					ARGE VOLUMES	
Section VII - Precautions for S							
Steps to Be Taken in Case Ma WASTE	terial is Released or Spilled: Fl	LUSH A	REA WITH WA	ATER. THE SC	DLUTION IS NOT RCI	RA HAZARDOUS	
Waste Disposal Method: N/A							
Precautions to Be Taken in Ha FOR EXTENDED PERIODS	andling and Storing: DO NOT	FREEZ	E OR EXPOSE	TO TEMPERA	TURES IN EXCESS (OF 110° F (43° C)	
Other Precautions: N/A							
Section VIII - Control Measur	r cs						
Respiratory Protection: N/A	<u>-</u>						
Ventilation Local Exhaust: N/A Special: N/A				al: N/A			
	Mechanical: N/A	_		·- <u></u>	Other	: N/A	
Protective Gloves: N/A			Eye Prote	ection: N/A			
Other Protective Clothing: N							
Work Hygienic Practices: N/	A					7771	

3731

National Sanitary Supply Co. P.O. Box 61126 Los Angeles, Ca 90061 (213) 770-1970

5/21/96 2813 TOTONCHY, TALAL

193150

ASH GROVE CEMENT WEST, INC. 13939 N RIVERGATE BLVD PORTLAND OR 97203-6608

Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal USHA Hazard Communication Final Standard 29 CFR 1910, 1200,

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnessess in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container, Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerely,

Maria F. Frias Executive Administration

HANUEACTURER: 3M CENTER ST. PAUL, HN 55144-1000 PHONE NO. 612-733-1110

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT Date Issued: 11/14/94 Supercedes: NEW National Item#: 9654XX Product Name: 3M BRAND NEUTRAL CLEANER CONCENTRATE SECTION 2. INGREDIENTS CAS' NUMBER PERCENT 7732-18-5 68478-65-9 67-63-0 WATER
HYDROXYALKYL AMINE OXIDES
ISOPROPYL ALCOHOL
2-ETHYL-HEXYLOXYETHANOL 30 - 60 30 - 60 5 - 10 Note: INCASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT. THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL OR CHEMICALS SUBJECT TO REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-ACT OF 1986 AND 40 CFR PART 372.

Z-ETHYL-HEXYLOXYETHANOL

N/A = NOT APPLICABLE; N/D = NOT DETERMINED SECTION 3. PHYSICAL DATA Specific Gravity: CA 1:0 WATER = 1 Percent Volatile: CA 75% Evaporation Rate (=1): N/D Boiling Point (F): N/D
Vapor Pressure: N/D
or Density: N/D
ubility in Water: COMPLETE
Volatile Organics: CA. 15%
Viscosity: (100 CPS whility in Water: COMPLETE ph: CA.8

Volatile Organics: CA. 15% VOC less H20 & Exempt Solvent: CA 15% Viscosity: C 100 CPS Nelting Point: N/D Appearance and Odor: LIQUID, GREEN COLOR; PLEASANT FRAGRANCE Section 4. FIRE AND EXPLOSION HAZARD DATA Flash Point: CA 102 F
Flasmable Limits: N/D LEL= N/D UEL= N/D
Autoignition Temperature: N/D
Extinguishing Media: WATER CARBON DIOXIDE, DRY POWDER, FOAM
Special Fire Fighting Procedures: WEAR FULL PROTECTIVE CLOTHING, INCLUDING
HELHET, SELF-CONTAINED, POSITIVE PRESSURE OR PRESSURE DEMAND BREATHING
APPARATUS, BUNKER COAT AND PANTS, BANDS AROUND ARMS, WAIST AND LEGS, FACE
MASK, AND PROTECTIVE COVERING FOR EXPOSURE AREAS OF THE HEAD.
Unusual Fire and Explosion Hazards: SEE HAZARDOUS DECOMPOSITION SECTION FOR
PRODUCTS OF COMBUSTION. CLOSED CONTAINERS EXPOSED TO HEAT FROM FIRE MAY
BUILD PRESSURE AND EXPLODE. NFPA-HAZARD-CODES: HEALTH -2 FIRE -2 REACTIVITY -0
UNUSUAL REACTION HAZARD: NONE
OSHA FIRE HAZARD CLASS: CLASS II COMBUSTIBLE LIQUID SECTION 5. REACTIVITY DATA Stability: STABLE Incompatibility - Materials to Avoid: STRONG OXIDIZING AGENTS.

randous Decomposition Products: CARBON MONOXIDE AND CARBON DIOXIDE, XIDES OF NITROGEN, IRRITANT VAPORS OR GASES.

Hazardous Polymerization: WILL NOT OCCUR

SECTION 6. ENVIRONMENTAL INFORMATION

Spill Response: REFER TO OTHER SECTIONS OF THIS MSDS FOR INFORMATION
REGARDING PHYSICAL AND HEALTH HAZARDS, RESPIRATORY PROTECTION, VENTILATION.
AND PERDONAL PROTECTIVE EQUIPMENT. IN THE U.S.A., CALL (612) 733-1110 OR
(612) 733-6100 FOR 24-HOUR SPILL ASSISTANCE. CONTAIN SPILL. COLLECT
SPILLED MATERIAL.
Recommended Disposal: SMALL QUANTITIES (LESS THAN 5 GAL. (19 L) MAY BE
DISCHARGED TO A WASTEWATER TREATMENT SYSTEM.
DISCHARGED TO A WASTEWATER TREATMENT SYSTEM.
Environmental Data: A 3M PRODUCT ENVIRONMENTAL DATA SHEET (PED) IS
AVAILABLE.
THE USE OF THIS PRODUCT IS EXPECTED TO HAVE NO SIGNIFICANT ENVIRONMENTAL
INPACT. MIST COMPONENTS OF THIS PRODUCT WILL EVENTUALLY DEGRADE IN THE
ENVIRONMENT.
REGULATIONS OR AUTHORITIES BEFORE DISPOSAL. U.S. EPA HAZARDOUS WASTE
NUMBER = DOOL (IGNITABLE)

TSCA: ALL COMPONENTS USED IN THE MANUFACTURE OF THIS MATERIAL ARE IN COMPLIANCE WITH THE US TSCA INVENTORY.

PRESSURE -NO REACTIVITY -NO CHRONIC - YES FIRE - YES EPCRA HAZARD CLASS:

SECTION 7. HEALTH HAZARD DATA

Eye Contact: Severe Eye Irritation: SIGNS/SYMPTOMS CAN INCLUDE REDNESS,
SHELLING, PAIN, TEARING, CLOUDY APPEARANCE OF THE CORNEA, IMPAIRED VISION AND POSSIBLE PERMANETLY IMPAIRED VISION.

Skin Contact: Severe Skin Irritation: SIGNS/SYMPTOMS CAN INCLUDE REDNESS, SWELLING, ITCHING, DRYNESS, CRALKING, BLISTERING, AND PAIN.

Inhalation: PROLONGED OR REPEATED EXPOSURE MAY CAUSE:

Central Nervous System Depression: SIGNS/SYMPTOMS CAN INCLUDE HEADACHE, NIZZINESS, DROWSINESS, INCOORDINATION, SLOWED REACTION TIME, SLURRED PEECH, GIDDINESS AND UNCONSCIOUSNESS.

Irritation (upper respiratory): SIGNS/SYMPTONS CAN INCLUDE DORENESS OF THE NOSE AND THROAT, COUGHING AND SNEEZING.

If Swallowed: PRODUCT. INGESTION IS NOT A LIKELY ROUTE OF EXPOSURE TO THIS

Ingestion may cause:
Sastrointestinal Effects: SIGNS/SYMPTOMS GENERALY WILL INCLUDE ABDONINAL PAIN,

Other Health Hazard Information:
A 3M PRODUCT TOXICITY SUMMARY SHEET IS AVAILABLE.

MATIONAL SAFETY DATA SHEET Product Name: 3H BRND NEUTRAL CLEANER CONCENTRATE Date Issued: 11/14/94 National Item#: 9634

PAGE 3

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. GET IMMEDIATE MEDICAL ATTENTION.

CONTACT: IMMEDIATELY FLUSH SKIN WITH LARGE AMOUNTS OF WATER. REMOVE ONTAHINATED CLOTHING. IF IRRITATION PERSISTS, CALL A PHYSICIAN. WAS CONTAMINATED CLOTHING BEFORE REUSE AND DISPOSE OF CONTAMINATED SHOES.

Inhalation: IF SIGNS/SYMPTOMS OCCUR, REMOVE PERSON TO FRESH AIR TO SYMPTOMS CONTINUED, CALL A PHYSICIAN. IF SIGNS/

If Swallowed: DO NOT INDUCE VOMITING. DRINK TWO GLASSES OF WATER. A PHYSICIAN. CALL

- Eye Protection: AVOID EYE CONTACT: THE FOLLOWING SHOULD BE BE WORN ALONE OR IN COMBINATIONM AS APPROPRIATE, TO PREVENT EYE CONTACT: WEAR VENTED GOGGLES. WEAR FULL FACE SHIELD. ##WHEN USED AS DIRECTED, EYE CONTACT WITH THIS MATERIAL IS NOT EXPECTED TO OCCUR.
- Protection: AVOID SKIN CONTACT. WEAR APPROPRIATE GLOVES WHEN HANDLING HIS MATERIAL. A PAIR OF GLOVES HADE FROM THE FOLLOWING MATERIAL(S) ARE ECOMMENDED: BUTYL RUBBER. USE ONE OR MORE OF THE FOLLOWING PERSONAL PROTECTION ITEMS AS NECESSARY TO PREVENT SKIN CONTACT: APRON, COVERALLS ***WHEN USED AS DIRECTED, SKIN CUNTACT WITH THIS MATERIAL IS NOT EXPECTED TO OCCUR.
- Ventilation Protection: USE WITH APPROPRIATE LOCAL EXHAUST VENTILATION, PROVIDE APPROPRIATE LOCAL EXHAUST VENTILATION AT TRANSFER POINTS. IF EXHAUST VENTILATION IS NOT ADEQUATE, USE APPROPRIATE RESPIRATORY PROTECTION.
- **#HEN USED AS DIRECTED, NO SPECIAL VENTILATION IS REQUIRED.
 Prevention of Accidental Ingestion: DO NOT EAC, DRINK OR SHOKE WHEN USING THIS PRODUCT. WASH EXPOSED AREAS THOROUGHLY WITH SOAP WATER. DO NOT INGEST.
- Recommended Storage: STORE AWAY FROM HEAT, KEEP CONTAINER CLOSED WHEN NOT IN USE.
- Fire and Explosion Avoidance: KEEP CONTAINER TIGHTLY CLOSED. KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME, AND OTHER SOURCES OF IGNITION. PREVENT ALL SOURCES OF IGNITION.
- Other Precautionary Information: ***NOTE: THIS MATERIAL IS INTENDED TO BE DILUTED ONLY WITH THE 3M TWIST 'N FILL CHEMICAL DISPENSER.

T U D B P B T P LI T P	EXPOSURE LIMITS		=	* =	
INGREDIENTS WATER	VALUE NONE	NONE	TYPE	NONE	SK I N*
HYDROXYALKYL AMINE OXIDES	NONE	NONE	NONE	NONE	
ISDPROPYL ALCOHOL	<u> </u>	PPH	TWA	ACGIH	
ÍSÓPRÓPÝĽ ÁĽCOHÓĽ ISOPROPYĽ AĽCOHOĽ	100 100 100 500 NONE	PPM PPM		AC GÌH OSHA OSHA	
1 PROPYL ALCOHOL	ŠČĎ	PPH NONE	STEL	ŎŠĤÃ	
THYL HEXYLOXYETHANOL	NONE	NONE	NONE	NONE	

MATERIAL SAFETY DATA SHEET Product Name: 3M BRAND NEUTRAL CLEANER CONCENTRATE Date Issued: 11/14/94 National Item#: 9634

PAGE 4

- * Skin Notation: LISTED SUBSETANCES INDICATED WITH "Y" UNDER SKIN REFER TO THE POTENTIAL CONTRIBUTION TO THE OVERALL EXPOSURE BY THE CUTANEOUS ROUTE INCLUDING MUCDUS MEMBRANE AND EYE, EITHER BY AIRBORNE OR, MORE PARTICULARLY BY DIRECT CONTACT WITH THE SUBSTANCE. VEHICLES CAN ALTER SKIN ABSORPTION.
- Source of Exposure Limit Data:

 "ACGIH: AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS

 "OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

 "CMRG: CHEMICAL MANUFACTURE RECOMMENDED GUIDELINES

 "NONE: NONE ESTABLISHED

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 MANUFACTURER: 3H CENTER ST. PAUL, MN 55144-1000 PHONE NO. 612-733-1110

MATERIAL SAFETY DATA SHEET SECTION 1. IDENTIFICATION OF PRODUCT Product Name: 3M HEAVY DUTY MULTISURFACE Date Issued: 11714/94 Supercedes: NEW National Item#: 9633XX SECTION 2 INGREDIENTS CAS NUMBER PERCENT 1-METHOXY-2-PROPANOL
WATER
ETHANOLAMINE
HYDROXYALKYL ANINE OXIDES
ISOPROPYL ALCOHOL
DODECYLBENZENESULFONIC ACID
2-ETHYL-HEXYLOXYETHANOL
Z-METHOXY-1-PROPANOL 107-98-2 7732-18-5 58478-65-9 27176-87-0 1559-35-9 1589-47-5 Note: IN CASE OF EMERGENCY: THE NUMBER AT THE TOP OF THIS PAGE PROVIDES 24 HOUR RESPONSE FROM ANY PHONE FOR ALL EMERGENCIES WITH THIS PRODUCT. THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL OR CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO ALT OF 1986 AND 40 CFR PART 372. 2-ETHYL-HEXYLOXYETHANOL SECTION 3. PHYSICAL DATA Vapor Pressure: N/D
Vapor Pressure: N/D
Vapor Density: N/D
Solubility in Water: COMPLETE
Volatile Organics: CA, 55%
Viscosity: CA, 10 CPS
Appearance and Odor: LIQUID, COLOKLESS TO LIGHT AMBER COLOR, FRESH SCENT Section 4. FIRE AND EXPLOSION HAZARD DATA Flash Point: > 105 F T.C.C.
Flammable Limits: N/D
Autoignition Temperature: N/D
Extinguishing Media: WATER SPRY, LARBON DIOXIDE, DRY CHEMICAL, FOAM,
ALCOHOL-TYPE FORM
Special Fire Fighting Procedures: WEAR FULL PROTECTIVE CLOTHING, INCLUDING
HELMET, SELF-CONTAINED, POSITIVE PRESSURE OR PRESSURE DEMAND BREATHING
APPARATUS, BUNKER COAT AND PANTS, BANDS AROUND ARMS, WAIST AND LEGS, FACE
MASK, AND PROTECTIVE COVERING FOR EXPOSURE AREAS OF THE HEAD.
Unusual Fire and Explosion Hazards: CLOSED CONTAINERS EXPOSED TO HEAT FROM
FIRE MAY BUILD PRESSURE AND EXPLODE. HEALTH -2 FIRE +2 REACTIVITY -C UNUSUAL REACTION HAZARD: NONE CLASS II COMBUSTIBLE LIQUID NFOA=HAZARD=CODES: OSHA FIRE HAZARD CLASS: SECTION 5. REACTIVITY DATA Stability: STABLE Incompatibility - Materials to Avoid: STRONG OXIDIZING AGENTS. ardous Polymerization: WILL NOT OCCUR Hazardous Decomposition Products: CARBON MONOXIDE AND CARBON DIOXIDE, IRRITANT VAPORS OR GASES.

MATERIAL SAFETY DATA SHEET
Product Name: 3M HEAVY DUTY MULTISURFACE
CLEANER CONCENTRATE
Date Issued: 11/14/94
National Item#: 9633

SECTION 6. ENVIRONMENTAL INFORMATION

- Spill Response: OBSERVE PRECAUTIONS FROM OTHER SECTIONS. VENTILATE AREA. EXTINGUISH ALL IGNITION SOURCES, CONTAIN SPILL. COVER WITH ABSORBENT MATERIAL ONESPARKING TOOLS. PLACE IN AN APPROVED METAL CONTAINER AND SEAL.
- Recommended Disposal: INCINERATE IN A PERMITTED HAZARDOUS WASTE INCINERATOR. Environmental Data: A 3M PRODUCT ENVIRONMENTAL DATA SHEET (PED) IS AVAILABLE.
- THE USE OF THIS PRODUCT IS EXPECTED TO HAVE NO SIGNIFICANT ENVIRONMENTAL INPACT. MIST COMPONENTS OF THIS PRODUCT WILL EVENTUALLY DEGRADE IN THE ENVIRONMENT.
- Regulatory Information: SINCE REGULATIONS VARY, CONSULT APPLICABLE REGULATIONS OR AUTHORITIES BEFORE DISPOSAL. IN THE EVENT OF AN UNCONTROLLED RELEASE OF THIS MATERIAL, THE USER SHOULD DETERMINE IF THE RELEASE QUALIFIES AS A REPORTABLE QUANTITY. U.S. EPA HAZARDOUS WASTE NUMBER = DOOI (IGNITABLE)
 - TSCA: ALL COMPONENTS USED IN THE MANUFACTURE OF THIS MATERIAL ARE IN COMPLIANCE WITH THE US TSCA INVENTORY.
 - EPCRA HAZARD CLASS: FIRE YES PRESSURE -NO REACTIVITY -NO CHRONIC YES

SECTION 7. HEALTH HAZARD DATA

- Contact: CHEMICAL RELATED EYE BURNS (CHEMICAL CORROSIVITY): SIGNS/
 SYMPTOMS CAN INCLUDE CLOUDY APPLARANCE OF THE CORNEA, CHEMICAL BURNS,
 AIN, TEARING, ULCERS, IMPAIRED VISION OR LOSS OF VISION.
- Skin Contact: Skin Burns (CHEMICAL CORROSIVITY): SIGNS/SYMPTONS CAN INCLUDE REDWESS, SWELLING, ITCHING, PAIN, BLISTERING, ULCERATION, SLOUGHING, AND SCAR FORMATION. MAY BE ABSORBED THROUGH THE SKIN AND PRODUCT EFFECTS SIMILIAR TO THOSE CAUSED BY INHALATION AND/OR INGESTION.
- Prolonged or repeated exposure may cause:
 Allergic Skin Reaction: SIGNS/SYMPTOMS CAN INCLUDE REDNESS, SWELLING,
 BLISTERING, AND ITCHING.
- Inhalation: Single overexposure, above recommended guidelines, may cause: Central Nervous System Depression: SIGNS/SYMPTOMS CAN INCLUDE HEADACHE, DIZZINESS, DROWSINESS, INCOORDINATION, SLOWED REACTION TIME, SLURRED SPEECH, GIDDINESS AND UNCONSCIOUSNESS.
 - Irritation (upper respiratory): SIGNS/SYMPTOMS CAN INCLUDE SORENESS OF THE NOSE AND THROAT, COUGHING AND SNEEZING.
 - WHILE THE FOLLOWING EFFECTS ARE ASSOCIATED WITH ONE OR MORE OF THE INDIVIDUAL INGREDIENTS IN THIS PRODUCT AND ARE REQUIRED TO BE INNCLUDED ON THE MSDS BY THE U.S. OSHA HAZARD COMMUNICATION STANDARD, THEY ARE NOT EXPECTED EFFECTS DURING FORESEEABLE USE OF THIS PRODUCT.
- Prolonged or repeated overexposure, above recommended guidelines, may cause:

 Heart Effects: SIGNS/SYMPTOMS CAN INCLUDE ARRHYTHMIA, HEART ATTACK AND
 DEATH...
 - Kidney Effects: SIGNS/SYMPTOMS LAN INCLUDE REDUCED URINE VOLUME, BLOOD IN URINE AND BACK PAIN.
- iver Effects: SIGNS/SYMPTOMS CAN INCLUDE YELLOW SKIN (JAUNDICE) AND -/ENDERNESS OF UPPER ABBORNERS

Nervous System Effects: SIGNS/SYMPTOMS CAN INCLUDE EMOTIONAL CHANGES, LACK OF COORDINATION, TREMORS AND SENSORY LOSS.

if Swallowed: INGESTION IS NOT A LIKELY ROUTE OF EXPOSURE TO THIS PRODUCT.
Ingestion may cause:

Irritation of Gastrointestinal Tissues: SIGNS/ SYMPTOMS CAN INCLUDED PAIN, VOMITING, ABDOMINAL TENDERNESS, NAUSEA, BLOOD IN VOMITUS, AND BLOOD IN FECES.

Aspiration Pneumonitis: SIGNS/SYMPTOMS CAN INCLUDE COUGHING, DIFFICULTY BREATHING, WHEEZING, COUGHING UP BLOOD AND PNEUMONIA, WHICH CAN BE FATAL.

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: IMMEDIATELY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. GET IMMEDIATE MEDICAL ATTENTION.

Skin Contact: IMMEDIATELY FLUSH SKIN WITH LARGE AMOUNTS OF WATER. REMOVE CONTAMINATED CLOTHING. IF IRRITATION PERSISTS, CALL A PHYSICIAN. WASH CONTAMINATED CLOTHING BEFORE REUSE.

Inhalation: IF SIGNS/SYMPTOMS OCCUR, REHOVE PERSON TO FRESH AIR ☐ IF SIGNS/SYMPTOMS CONTINUE, CALL A PHYSICIAN.

If Swallowed: IF SWALLOWED, CALL AMYSICIAN IMMEDIATELY, ONLY INDUCE VOMITING AT THE INSTRUCTION OF A PHYSICIAN, NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SECTION 9 PRECAUTIONARY INFORMATION

Eye Protection: AVOID EYE CONTACT: THE FOLLOWING SHOULD BE WORN ALONE OR IN COMBINATION, AS APPROPRIATE, TO PREVENT EYE CONTACT: WEAR VENTED SOGGLES. WEAR FULL-FACE SHIELD,

**WHEN USED AS DIRECTED, EYE CONTACT WITH THIS MATERIAL IS NOT EXPECTED TO OCCUR.

Skin Protection: AVOID SKIN CONTACT. WEAR APPROPRIATE GLOVES WHEN HANDLING THIS MATERIAL. A PAIR OF GLOVES MADE FROM THE FOLLOWING MATERIAL(S) ARE RECOMMENDED: BUTYL RUBBER, NEOPRENE, NITRILE RUBBER. USE ONE OR MORE OF THE FOLLOWING PERSONAL PROTECTION ITEMS AS NECESSARY TO PREVENT SKIN CONTACT: APRON, CUVERALLS

**WHEN USED AS DIRECTED, SKIN CUNTACT WITH THIS MATERIAL IS NOT EXPECTED TO OCCUR.

Ventilation Protection: USE WITH APPROPRIATE LOCAL EXHAUST VENTILATION PROVIDE APPROPRIATE LOCAL EXHAUST VENTILATION AT TRANSFER POINTS. IF EXHAUST VENTILATION IS NOT ADEQUATE, USE APPROPRIATE RESPIRATORY PROTECTION.

**WHEN USED AS DIRECTED, NO SPECIAL VENTILATION IS REQUIRED.

Respiratory Protection: AVOID BREATHING OF VAPORS, MISTS OR SPRAY. AVOID BREATHING OF AIRBORNE MATERIAL. SELECT ONE OF THE FOLLOWING NIOSH APPROVED RESPIRATORS BASED ON AIRBORNE CONCENTRATION OF CONTAMINATS AND IN ACCORDANCE WITH OSHA REGULATIONS: FULL-FACE ORGANIC VAPOR RESPIRATOR

**WHEN USED AS DIRECTED, RESPIRATORY PROTECTION IS NOT REGUIRED. Prevention of Accidental Ingestion: WASH HANDS AFTER HANDLING AND BEFORE EATING.

Recommended Storage: STORE AWAY FROM HEAT KEEP CONTAINER IN WELL-

Fire and Explosion Avoidance: KEEP CONTINER TIGHTLY CLOSED. KEEP AWAY FROM HEAT, SPARKS, OPEN FLAME, AND OTHER SOURCES OF IGNITION, PREVENT ALL TOURCES OF IGNITION. GROUND CONTAINERS SECURELY WHEN TRANSFERRING ON TENTS. WEAR LOW STATIC OR PROPERLY GROUNDED SHOES. COMBUSTIBLE LIQUID AND VAPOR.

**WHEN USED AS DIRECTED, CONTAINER GROUDING AND LOW STATIC OR GROUNDED SHOES ARE NOT REQUIRED. (CONTINUED NEXT PAGE)

MATERIAL SAFETY DATA SHEET
Product Name: 3M BRAND HEAVY DUTY MULTISURFACE CLEANER CONCENTRATE
Date Issued: 11/14/94
National Iftem#: 9633

Other Precautionary Information:

**NOTE: THIS NATERIAL IS INTENDED TO BE DILUTED ONLY WITH THE 3M TWIST'N

FILL CHEMICAL DESPENSER.

INGREDIENTS	EXPOSURE LIMI	TS UNIT	TYPE	HTUA	SK I N#
1-METHOXY-2-PROPANOL 1-METHOXY-1-PROPANOL 1-METHOXY-1-PROPANOL 2-METHOXY-1-PROPANOL	OCCUPENCA CHOCOCOPENIA	**************************************	TELLE L LE L LEEEN NOON NOON NOON NOON NO	HH HH HH GGHHNGGHHNNN CCSSOCCSSOCCOSSOCC	

*Skin Notation: LISTED SUBSTANCES INDICATED WITH "Y" UNDER SKIN REFER TO THE POTENTIAL CONTRIBUTION TO THE OVERALL EXPOSURE BY THE CUTANEOUS ROUTE INCLUDING MUCOUS MEMBRANE AND EYE, EITHER BY AIRBORNE OR, MORE PARTICULARLY, BY DIRECT CONTACT WITH THE SUBSTANCE. VEHICLES CAN ALTER SKIN ABSORPTION.

Source of Exposure Limit Data:
ACGIH: AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
NONE: NONE ESTABLISHED

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.

Material Safety Data Sheet

for

Dolomite

Section I - Material Description

Manufacturer's name and address:

Ash Grove Cement Company

13939 N. Rivergate Blvd. Portland, OR 97203

Emergency Telephone Number:

(412) 553-4001 - ALCOA

(503) 286-1677 - ASH GROVE

Technical:

(412) 553-2881 - ALCOA

Chemical Name & Formula: Dolomite; Mg CO₃, Silicon Dioxide, SiO₂

Other Designation: None

CAS No: Dolomite (16389-88-1); Silicon Dioxide (7631-86-9)

Manufacturer: Northwest Alloys, P.O. Box 115, Addy, WA 99101

Product Use: Chemical processing

Revised: May 1996

Section II - Hazardous Ingredients and Occupational Exposure Limits

	(<1 %)		TWA in mg/mg ³	
	% Typical	<u>ACGI</u>	<u>H TLV</u>	<u>OSHA PEL</u>
CaCO ₃ - MgCO ₃	97-100	Amorphous silica	10	6
SiO ₂	0-3			
H ₂ O Remainder		C:O (\ \ 214	:O /I-	_
LD found for oral route of	SiO ₂ (amorphous) 310	ou mg/k	8	

Section III - Physical Data

Physical Form: Solid Boiling Temperature: NA

Freeze-Melt Temperature: Not determined

Vapor Pressure: NA

Vapor Density: (Air = 1) NA

Evaporation Rate: NA

Specific Gravity: Not determined

Density: 2.87 g/cc

Water Solubility: Slight

pH: 9.60 [50 % weight (gm) to water volume (ml)]

Color: Grayish-white

Odor: None

Odor Threshold: NA

Coefficient of Water/Oil Distribution: Not determined

Section IV - Fire and Explosion Data

Flashpoint: NA

Auto-Ignition Temperature: NA

Flammability Limits in Air/Upper/Lower: NA

Product is non-combustible. Not an explosion hazard. Use fire extinguishing agent suitable for the surrounding fire. Wear NIOSH approved, self-contained breathing apparatus and protective clothing when appropriate.

Section V - Reactivity Data

Material is stable under normal conditions of use, storage, and transportation.

Section VI - Health Hazard Information

This product has not undergone testing for either acute or chronic toxic effects. However, based on its chemical composition, we would expect it to be a low health risk by inhalation so long as the occupational exposure limits specified under Section II are met.

Section VII - Spill, Leak, and Disposal Procedures

Use dry cleanup procedures; avoid dusting. Collect in containers or bags.

If reuse or recycling is not possible, material may be disposed of at a sanitary landfill.

RCRA Hazardous Waste No. Not Federally Regulated

Section VIII - Special Protection and Precautions Use with adequate ventilation to meet exposure limits as listed in Section II. Where the exposure limit is or may be exceeded, use NIOSH approved respiratory protections. Select appropriate respirator (dust respirator, etc.) based on the concentrations of actual or potential airborne contaminants present. Section IX - Regulatory Information Chemical substance components have been reported to the EPA Office of Toxic Substances in accordance with the requirements of the Toxic Substances Control Act (Title 40 CFR Part 710). For purposes of SARA III reporting, this substance contains no ingredients listed on CERCLA, Extremely Hazardous, or 313 lists. The reportable chemical substances in this product are regulated by the OSHA Hazard Communication Standard (29CFR 1910.1200) solely because they are listed by ACGIH. However, they do not fit any of the five proposed hazard categories under SARA Sections 311,312. D.O.T. Shipping Name, Hazard Class, I.D. No. (if applicable) Not Regulated Canadian TDG Hazard Class & PIN - Not Regulated

- U.S. Dept. Of Health and Human Services, NIOSH: Registry of Toxic Effects of Chemical Substances, 1985-86 Edition
- Sax, N. Irving: <u>Dangerous Properties of Industrial Materials</u>, Van Nostrand Reinhold Co. Inc, 1984

Section X - References

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

RECEIVED JUN 2 114993



Material Safety Data Sheet

1 of 7 Page

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEVRON Supreme Motor Oil SAE 10W-30

PRODUCT NUMBER(S): CPS220019 CPS238132

COMPANY IDENTIFICATION

EMERGENCY TELEPHONE NUMBERS

Chevron USA Products Company Environmental, Safety, and Health 575 Market St. San Francisco, CA 94105-2856

HEALTH (24 hr): (800)231-0623 or (510)231-0623 (International) TRANSPORTATION (24 hr): CHEMTREC (800)424-9300 or (202)483-7616

PRODUCT INFORMATION: (800)822-5823 MSDS Requests (800)582-3835 Technical

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMPOSITION COMMENT:

All the components of this material are on the Toxic Substances Control Act Chemical Substances Inventory.

This product fits the ACGIH definition for mineral oil mist. The ACGIH TLV is 5 mg/m3, the OSHA PEL is 5 mg/m3.

The proportion compositions are given to allow for the various ranges of the components present in the whole product and may not equal 100%.

100.0 % CHEVRON Supreme Motor Oil SAE 10W-30

CONTAINING

COMPONENTS

ANOUNT

LIMIT/QTY

AGENCY/TYPE

LUBRICATING BASE OIL CONTAINING ONE OR MORE OF THE FOLLOWING > 85.0%

HYDROTREATED DIST., HVY PARA

Revision Number: 5

Revision Date: 03/20/93

MSDS Number: 004449

NDA - No Data Available

NA - Not Applicable

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the AMSI MSDS Standard (2400.1) by the Toxicology and Realth Risk Assessment Unit, CRTC, P.O. Box 4054, Richmond, CA 94804

X-005051 (06-89)

CHEVRON Supreme Motor Oil SAE 10W-30

2 of 7 Page

Chemical Name: DISTILLATES, HYDROTREATED HEAVY PARAFFINIC

CA564742547

14:39

5mg/m3 mist

ACGIH TWA ACGIH STEL

10mg/m3 mist 5mg/m3 mist

OSHA TWA

SOLVENT REFINED DIST., HVY PAR

Chemical Name: DISTILLATES, SOLVENT-REFINED HEAVY PARAFFINIC

CAS64741884

5 mg/m3 mist . ACGIH TWA

10mg/m3 mist

ACGIH STEL

5 mg/m3 mist

OSHA TWA

SOLVENT DEWAXED DIST., HVY PAR

Chemical Name: DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC

CAS64742650

5 mg/m3 mist

ACGIH TWA

10 mg/m3 mist

ACGIH STEL

5 mg/m3 mist

OSHA TWA

ADDITIVES INCLUDING THE FOLLOWING < 15.0%

ZINC ALKYL DITHIOPHOSPHATE

Chemical Name: PHOSPHORODITHIOIC ACID, 0, 0-DI-C1-14-ALKYL ESTERS, ZINC SALT

CAS68649423

TLV - Threshold Limit Value

TWA - Time Weighted Average

STEL - Short-term Exposure Limit TPQ - Threshold Planning Quantity

RQ - Reportable Quantity

CPS - CUSA Product Code

- Chevron Chemical Company

CAS - Chemical Abstract Service Number

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

This substance is not expected to cause prolonged or significant eye irritation.

SKIN:

This substance is not expected to cause prolonged or significant skin irritation. The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if it gets on the skin. This hazard evaluation is based on data from similar materials.

INGESTION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if swallowed. This hazard evaluation is based on data from similar materials.

INHALATION:

The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. This hazard evaluation is based on data from similar materials.

Revision Number: 5

Revision Date: 03/20/93

MSDS Number: 004449

NDA - No Data Available

NA - Not Applicable

X-005021 (01-89)

Page 3 of 7

4. FIRST AID MEASURES

EYE:

06/13/96

No first aid procedures are required. However, as a precaution flush eyes with fresh water for 15 minutes. Remove contact lenses if worn.

No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing. INGESTION:

If swallowed, give water or milk to drink and telephone for medical advice. Consult medical personnel before inducing vomiting. If medical advice cannot be obtained, then take the person and product container to the nearest medical emergency treatment center or hospital.

INHALATION:

Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: (COC) 399F (204) Min.

AUTOIGNITION: NDA

FLAMMABILITY LIMITS (% by volume in air): Lover: NDA Upper: NDA

EXTINGUISHING MEDIA:

CO2, dry chemical, foam and water fog.

MFPA RATINGS: Health 1; Flammability 1; Reactivity 0.

FIRE FIGHTING INSTRUCTIONS:

For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

COMBUSTION PRODUCTS:

Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

CHEMTREC EMERGENCY NUMBER (24 hr): (800)424-9300 or (202)483-7616 ACCIDENTAL RELEASE MEASURES:

Stop the source of the leak or release. Clean up releases as soon as possible. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Revision Number: 5 Revision Date: 03/20/93 MSDS Number: 004469
NDA - No Data Available NA - Not Applicable

CHEVRON Supreme Motor Oil SAE 10W-30

Page 4 of 7

7. HANDLING AND STORAGE

HANDLING AND STORAGE:

DO NOT weld, heat or drill container. Residue may ignite with explosive violence if heated sufficiently. CAUTION! Do not use pressure to empty drum or drum may rupture with explosive force.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION:

No special eye protection is usually necessary.

SKIN PROTECTION:

No special skin protection is usually necessary. Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing protective clothing.

RESPIRATORY PROTECTION:

No special respiratory protection is normally required. However, if operating conditions create airborne concentrations which exceed the recommended exposure standards, the use of an approved respirator is required.

ENGINEERING CONTROLS:

Use adequate ventilation to keep the airborne concentrations of this material below the recommended exposure standard.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION:

Amber liquid.

ph: NDA

VAPOR PRESSURE: <0.1 mm Hg @ 20C

VAPOR DENSITY

(AIR=1): NA

BOILING POINT: >600F (316C)

FREEZING POINT: NDA MELTING POINT: NA

SOLUBILITY: Soluble in hydrocarbon solvents; insoluble in water.

SPECIFIC GRAVITY: 0.88 @15.6/15.6C

DENSITY: NDA EVAPORATION RATE: NA

VISCOSITY: 70.0 cSt @ 40C (Min.)

PERCENT VOLATILE

(VOL): NA

Revision Number: 5 Revision Date: 03/20/93 MSDS Number: 004449
NDA - No Data Available NA - Not Applicable

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS:

NDA

06/13/96

CHEMICAL STABILITY:

Stable.

CONDITIONS TO AVOID:

No data available.

INCOMPATIBILITY WITH OTHER MATERIALS:

May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

HAZARDOUS POLYMERIZATION:

Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

SKIN EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE ORAL EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ACUTE INHALATION EFFECTS:

No product toxicology data available. The hazard evaluation was based on data from similar materials.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains zinc alkyl dithiophosphates (ZDDPs). Several ZDDPs have been reported to have weak mutagenic activity in cultured mammalian cells but only at concentrations that were toxic to the test cells. We do not believe that there is any mutagenic risk to workers exposed to ZDDPs.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrocracking. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (1ARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is

Revision Number: 5 Revision Date: 03/20/93 MSDS Number: 004449
NDA - No Data Available NA - Not Applicable

CHEVRON Supreme Notor Oil BAE 10W-30

6 of 7 -

thoroughly removed by washing with soap and water. See Chevron Material Safety Data Sheet No. 1793 for additional information on used motor oil.

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

No data available.

14:41

ENVIRONMENTAL PATE:

This material is not expected to present any environmental problems other than those associated with oil spills.

13. DISPOSAL CONSIDERATIONS

DISPOSAL CONSIDERATIONS:

Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

14. TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT SHIPPING NAME: NOT DESIGNATED AS A HAZARDOUS MATERIAL BY THE

FEDERAL DOT

DOT HAZARD CLASS: NOT APPLICABLE

DOT IDENTIFICATION NUMBER: NOT APPLICABLE

DOT PACKING GROUP: NOT APPLICABLE

15. REGULATORY INFORMATION

SARA 311 CATEGORIES:

- 1. Immediate (Acute) Health Effects:
- 2. Delayed (Chronic) Health Effects: NO
- 3. Fire Hazard:
- 4. Sudden Release of Pressure Hazard: NO
- 5. Reactivity Hazard:

REGULATORY LISTS SEARCHED:

01=SARA 313

11-NJ RTK

21=TSCA Sect 4(e)

02=MASS RTK

12=CERCLA 302.4

22=TSCA Sect 5(a)(e)(f)

03-NTP Carcinogen 13-MN RTK

23=TSCA Sect 6

Revision Number: 5

Revision Date: 03/20/93

MSDS Number: 004449

NDA - No Data Available

NA - Not Applicable

X-00S021 (01-89)

CHEVRON Supreme Motor Oil BAE 10W-30

Page 7 of 7

04=CA Prop 65-Carcin 14-ACGIH TWA 24=TSCA Sect 12(b) 05=CA Prop 65-Repro Tox 15=ACGIH STEL 25=TSCA Sect 8(a) 06=IARC Group 1 16-ACGIH Calc TLV 26=TSCA Sect B(d) 07=IARC Group 2A 17-OSHA TWA 28-Canadian WHMIS 08=IARC Group 28 18-OSHA STEL 29-OSHA CEILING 09=SARA 302/304 19=Chevron TWA 30-Chevron STEL 10-PA RTK 20=EPA Carcinogen

The following components of this material are found on the regulatory lists indicated.

DISTILLATES, SOLVENT-REFINED HEAVY PARAFFINIC
is found on lists: 14.15,17,
DISTILLATES, HYDROTREATED HEAVY PARAFFINIC
is found on lists: 14,15,17,
DISTILLATES, SOLVENT DEWAXED HEAVY PARAFFINIC
is found on lists: 14,15,17,
PHOSPHORODITHIOIC ACID,0,0-DI-Cl-14-ALKYL ESTERS, ZINC SALTS
is found on lists: 01,11,

16. OTHER INFORMATION

NFPA RATINGS: Health 1; Flammability 1; Reactivity 0; (Least-0, Slight-1, Moderate-2, High-3, Extreme-4). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT:

Revised to update Section 1 (Company I.D.), Section 5 (Fire Fighting Measures) and revises the MSDS to comply with the ANSI Z400.1 Standard.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modification of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Revision Number: 5 Revision Date: 03/20/93 MSDS Number: 004449

NDA - No Data Available NA - Not Applicable

8/06/96 2813 TOTONCHY, TALAL 193150

ASH GROVE CEMENT WEST, INC. 13939 N RIVERGATE BLVD PORTLAND OR 97203-6608

RECE	EIVED
AUG 1	2 1996
BY:	

Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal DSHA Hazard Communication Final Standard 29 CFR 1910. 1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnessess in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerety,

Maria F. Frias Executive Administration NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 Emergency No. 1-800-535-5053 (INFOTRAC)

MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION	ON OF PRODUCT*		_ ~ _ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
Product Name: ACTION DISINFECTANT CL	D PLUS EANER SANITIZER	Date Issued Supercedes: National It	: 02/08/95 11/14/94 em#: 1703XX
SECTION 2. INGREDIENTS	CAS NUMBER PERCENT	EXPOSURE LIM	ITS IN AIR CGIH TLV
ACTIVE INGEDIENTS: **OCTYL DECYL DINETHYL AMHONIUM CHLORIDE	6824-95-3 1.140	N/E	N/E
**DIOCTYL DIMETHYL AMMONIUM CHLORIDE	5538-94-3 0.456	N/E	N/E
**DIDECYL DIMETHYL AMMONIUM_CHLORIDE	7173-51-5 0.684	N/E	N/E
**ALKYL DIMETHE BENZYL	68424-85-1 1.520	NZE	N/E
Other Ingredients: AMMONIUM CHLORIDE TETRASODIUM EDTA ETHOXYLATED	64-02-8 2-3	N/D	N/D
NONY: PHENOI	9016-45-9 3-4	N/D	N/D N/D
SODÎÛN NETÂŞÎLÎCATE Color Fragrance	6834-92-0 <1 NONE <1	Smg/M3 N/D	N/D
PRAGRANCE WATER	NONE KI 7732-18-5 BALANCE	N/D NONE	N/D None
*THESE MATERIALS ARE SU III, SECTION 33 AND 40	BJECT TO THE REPORTING CFR PART 372.	REQUIREMENTS	UNDER SARA TIT

LΕ **THESE MATERIALS MUST HAVE APPROPRIATE FEDERAL AND STATE EPA REGISTRATIONS PRIOR TO SALE AND DISTRIBUTION.

```
N/A = Not Applicable
                                          N/D = Not Determined N/E = Not Established
SECTION 3. PHYSICAL DATA
Boiling Point (F): 212

Vapor Pressure (mm Hg.): (18

Vapor Density (Air=1): N/A

Solubility in Water: SOLUBLE

Appearance and Odor: CLEAR GREEN/FLORAL FRAGRANCE.
Section 4. FIRE AND EXPLOSION HAZARD DATA
Flash Point (Test Method): NON-FLAMMABLE Flammable: NON-FLAMMABLE Auto-Ignition Temp.: LEL = N/A UEL = N/A Extinguishing Media: CO2, DRY CHEMICAL, FOAM, WATER FOG
Special Fire Fighting Procedures: NORMAL FIRE FIGHTING PROCEDURES MAY BUSED. COOL AND USE CAUTION WHEN APPROACHING OR HANDLING FIRE-EXPOSED CONTAINERS.
```

Unusual fire & Explosion Hazards: CONTAINERS MAY BURST IN HEAT… SECTION 5. REACTIVITY DATA

Stability: STABLE
Hazardous Polymerization: WILL NOT OCCUR
Conditions to Avoid: NONE KNOWN TO NSS
Materials to Avoid: ANIONIC DETERGENTS. DO NOT MIX WITH OTHER CHEMICALS.
Hazardous Decomposition Products: THERMAL DECOMPOSITION MAY PRODUCE TOXIC
FUMES. MAY CONSIST OF CO., CO2, HC1, SMALL AMOUNTS OF PHOSGENE,
CHLORINE AND ORGANIC VAPORS OF UNKNOWN COMPOSITION.

NATIONAL SANITARY SUPPLY CO Product Name: ACTION D PLUS DISINFECTANT CLEANER SANITIZER National Item:#: 1703 Date Issued: 02/08/95

SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES Small Spills: (For Liquid Concentrate) RINSE AREA THOROUGHLY WITH WATER. Large Spills: (For Liquid Concentrate) WEAR APPROPRIATE PROTECTIVE CLOTHING/EQUIPMENT. DIKE AREA TO CONTAIN SPILL. CLEAN UP USING ABSORBENT MATERIAL. PLACE ALL CONTAMINATED MATERIAL IN A CLOSED CONTAINER FOR DISPOSAL.

Disposal: UNDILUTED (Liquid Concentrate) PRODUCT RECOVERED FROM SPILLS MAY BE SENT TO LICENSED DISPOSAL FACILITY TO BE DISPOSED OF IN ACCORDANCE WITH FEDERAL/STATE REGULATIONS AND LOCAL ORDANCES. ORDANCES. Container Disposal: TRIPLE RINSE EMPTY CONTAINER THOROUGHLY WITH WATER AND DISCARD IN REGULAR TRASH COLLECTION IF ALLOWED BY LOCAL, STATE AND FEDERAL REGULATIONS IF NOT RECYCLED. DO NOT FLUSH TO SEVER. SECTION 7. HEALTH HAZARD DATA Primary Route(s) of Entry: EYES, SKIN, INGESTION, INHALATION.

Symptoms of Overexposure:

Eye Contact: EYE IRRITANT. IF NOT PROMPTY TREATED, EYE DAMAGE MAY

RESULT.

Skin Contact: SKIN IRRITATION. IRRIATION CAN OCCUR FROM CONTACT

HITH CONCENTRATED PRODUCT OR FROM PROLONGED CONTACT. MILD IRRITATION DUE

TO DEFATTING OF SKIN.

Inhalation: EXCESSIVE INHALATION OF HISTS CAN BE HARMFUL AND MAY

CAUSE HEADACHE, DIZZINESS, ASPHYXIA, ANESTHETIC EFFECTS

AND POSSIBLE UNCONSCIOUSNESS.

Ingestion: HARMFUL IF SWALLOWED. POSSIBLE CHEMICAL PNEUMONITIS IF

ASPIRATED INTO LUNGS: NAUSEA. HAY CAUSE STOMACH PAIN/CRAMPS.

VOMITING AND NAUSEA. LDSO NOT ESTABLISHED. AVOID CONTAMINATION

OF FOOD. Primary Route(s) of Entry: EYES, SKIN, INGESTION, INHALATION. OF FOOD. Chronic Health Hazards: NONE KNOWN TO NSS. SECTION 8. EMERGENCY AND FIRST AID PROCEDURES Eye Contact: IMMEDIATELY FLUSH THE EYE WITH LARGE QUANTITIES OF RUNNING WATER FOR A MINIMUM OF 15 MINUTES. HOLD THE EYELIDS APART DURING THE IRRIGATION TO ENSURE FLUSHING OF THE ENTIRE SURFACE OF THE EYE LID WITH WATER. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

Skin Contact: FLUSH THE EFFECTED AREA WITH LARGE QUANTITIES OF RUNNING WATER WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. WASH CLOTHING BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

Inhalation: REMOVE FROM CONTAMINATED AREA. IF SYMPTOMS OF RESPIRATORY DISCOMFORT PERSISTS, GET MEDICAL ATTENTION.

Ingestion: REQUIRES IMMEDIATE MEDICAL MANAGEMENT. DRINK MILK OR WATER AND GET MEDICAL ADVICE. VOMITING SHOULD BE INDUCED ONLY ON RECOMMENDATION OF MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. SECTION 9. SPECIAL PROTECTION INFORMATION Respiratory Protection: AVOID EXPOSURE TO SPRAY OR MIST. WHERE REQUIRED (IN THE ABSENCE OF APPROPRIATE VENTILATION). USE NIOSH APPROVED ORGANIC VAPOR RESPIRATOR.

Ventilation: ROOM VENTILATION MUST BE ADEQUATE TO MAINTAIN VAPOR CONCENTRATION BELOW TLV.

Protection Gloves: NEOPRENE (RUBBER) GLOVES RECOMMENDED.

Eye Protection: CHEMICAL GOGGLES/EYE PROTECTION.

Other Measures: APPROPRIATE PROTECTIVE EQUIPMENT WHEN GROSS EYE/SKIN CONTACT MAY OCCUR. AVOID FOOD CONTAMINATION. WASH WITH SOAP AND WATER AFTER USE/APPLIATION. EYEWASH ACCESSIBILITY RECOMMENDED.

MATERIAL SAFETY DATA SHEET Product Name: ACTION D PLUS DISINFECTANT CLEANER SANITIZER National Item#: 1703

National Item#: 1703 Date Issed: 02/08/95

COMMUNICATION REGULATION.

SECTION 10. ADDITIONAL PRECAUTIONS Handling and Storage: STORE IN A COOL, DRY PLACE. FOLLOW LABEL DIRECTIONS.

REEP OUT OF REACH OF CHILDREN. DO NOT STORE ON SIDE.

AVOID CREASING OR IMPACTING SIDE WALLS CONTAINER. Chronic, NO Reactive, NO PRATINGS: Acute, YES Press. Release, NO SARA TITLE III H&P RATINGS: Fire, NO PROTECTION -B SPECIFIC -0 HEALTH-2 FIRE -0 FIRE -0 REACTIVITY -0 REACTIVITY -0 HMIS RATING: NEPA RATING: SECTION 11. REGULATORY (OPTIONAL) HM-181 Proper Shipping Name (DOT) HM-181 Description (DDT): Proper Shipping Name Code: U UN Number:____ PG#: ____ Typical Analytical = N/A lbs/gal. Dilution Range: N/A - N/A gms./gal. VOC Content: Theoretical = N/A lb/gal. Phosphorous: % Concentrate = NONE THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD

MATERIAL SAFETY DATA SHEET

Date: 11/07/96 Nos. 1905, 5120, 5111

A. P. GREEN INDUSTRIES, INC. **GREEN BOULEVARD, MEXICO, MO 65265** EMERGENCY TELEPHONE NUMBER — 573-473-3626

SECTION 1

PRODUCT NAME:

SUPER HYBOND

GREENGUN-45

SUPER HYBOND®

GREENGUN-45 Plus

SUPER HYBOND

SUPER BOND

SUPER HYBOND GR Plus SUPER HYBOND J

J Plus

SUPER BOND Plus

SUPER HYBOND®

SUPER HYBOND

SUPER HYBOND® S Plus

PRODUCT TYPE:

Plastic Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY:

SiO,

= 48-51%

Al₂O₃ = 43-46% TiO₂

1-3%

FORMULA: Not Applicable

Fe₂O₃ 1-2% NaKO 1%

SECTION II PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL	<u>TLV-TWA</u>	CAS#
0 / 1 / 12 (0:0.)	0.05	14404

Cristobalite (SiO₂)

0.05 mg/m³

14464-46-1

(3-12%)

Respirable Dust

Quartz (SiO₂)

0.1 mg/m^{3*}

14808-60-7

(1-4%)

Respirable Dust

Aluminum Sulfate (<5%)

2 mg/m^{3*}

10043-01-3

Glass Cullet (Powdered Glass)

(None)

(None)

(<5%)

*Source: American Conference of Governmental Industrial Hygienists, 1995-1996.

SECTION III **HAZARDS INFORMATION**

Since product contains aluminum sulfate, SO_x fumes may be given off during burn-in.

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

2

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIQSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

SECTION IV FIRST AID MEASURES

EFFECT OF OVEREXPOSURE:

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

INHALATION: ACUTE:

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

FIRST AID MEASURES:

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

SECTION V FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

None

EXTINGUISHING MEDIA:

Not Combustible

FIRE FIGHTING INSTRUCTIONS:

No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: The aluminum sulfate present, if heated to

decomposition, will emit toxic fumes of SO_x.

SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for

use), sweep or shovel up and place in a container for disposal.

SECTION VII **HANDLING AND STORAGE**

Store in a dry place. Product is non-flammable.

SECTION VIII **EXPOSURE CONTROLS/PERSONAL PROTECTION**

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped containers of product.

SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Gray, Granular Mixture

BOILING POINT:

Not Applicable

pH:

2-4

SOLUBILITY IN WATER:

None

ODOR:

None

SPECIFIC GRAVITY:

2.6

MELTING POINT:

Not Applicable

SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

SECTION XI **TOXICOLOGICAL INFORMATION**

LD₅₀ or LC₅₀ for oral, dermal, or inhalation routes of administration: no data for product.

SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

Material Safety Data Sheet Product: SUPER HYBOND, etc.

SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated Not Regulated

Canadian TDG Hazard Class & PIN:

SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

SECTION XVI OTHER INFORMATION

MSDS Status: New Format, Replaces MSDS Dated 09/01/93

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\SHYBOND.116

	MSDS	30510
	REVISION DATE	
2.	PRODUCT NAME I	DOLOMITIC HYDRATED LIME
З.	PURE CHEMICAL NAME . 1	LIME
4.	CHEM. CATEGORY	
5.	DOT CLASSIFICATION .	
6.	MANUFACTURER	GENSTAR LIME CO.
	EMERGENCY PHONE '	702-643-7702
7.	VENDOR	
8.	HEALTH	3 SERIOUS HAZARD
9.	FLAMMABILITY	O MINIMAL HAZARD
10.	REACTIVITY	l SLIGHT HAZARD
11.	PROTECTION CODE I	Ď
٠	FACE SHIELD, GLOVES	S, SYNTHETIC APRON
12.	SOLID/LIQUID/GAS :	SOLID
13.	SPECIFIC GRAVITY I	NONE LISTED BY MANUFACTURER
14.	BOILING POINT	3162 DEG. F
15.	FLASH POINT	NONFLAMMABLE

16. FORM MIXTURE WHICH ONE ? (E=EXIT, P#=PAGE)

MSDS 30510

PRODUCT NAME .. DOLOMITIC HYDRATED LIME

MANUFACTURER .. GENSTAR LIME CO.

SCREEN 1 OF 1

	HAZARDOUS INGREDIENTS	PCT	CAS NO.
1	Calcium Hydroxide	50.0	1305-62-0
2	Magnesium Hydroxide	35.0	1309-42-8
3	Calcium Carbonate	5.0	1317-65-3
4	Silicon Dioxide	3.0	14808-60-7

WHICH ONE ? (E=EXIT, P#=PAGE, S#=SCROLL)



ety Data Sheet Material Sa Mechanical Fiber Glass Insulation MSDS No. 1009-5.1

SECTION 1: PRODUCT IDENTIFICATION

Product Name:

Fiber Glass Insulation

CAS#:

Mixture/None Assigned

Generic Name:

Fiber Glass Wool Product

Formula:

Mixture

Chemical Name:

Hazard Label:

FBG-003 or FBG-012

Schuller International, Inc.

Telephone:

(303)978-4900

Address:

Manufacturer:

P.O. Box 5108

Emergency:

1-800-424-9300

Denver, CO 80217-5108

Trade Names:
800 Series Spin Glas® Board insulations; 1000 Series Spin Glas® Board; Acoustic Backing Board;
EcoTherm™ Industrial Pipe Insulation; Insul-SHIELD™ Black (Coated); Fabrication Board; Fabricated Duct Board; Grooved Duct Board; Hullboard (Incombustible); Incombustible Microlite®; Mat Faced & Permacote® Linacoustic® (Types: Standard, HP, and R-300); Micro-Aire® Duct Board; Micro-Lok® Pipe Insulation; Microlite® Duct Wrap (plain, FSK, & vinyl faced); PAT Board; Permacote Spiracoustic™; Pipe and Tank Insulation; Precipitator Spin Glas®; R series Microlite® (plain, FSK, & vinyi facedi; Rigid Roundth (faced); Spin Glas© HfB 26 & 23; SpiracousticTM; Spiracoustic PlusTM; SuperDuctTM Boards; SuperRound®; SuperVane®; Zeston Hi-Lo Temp® Insulation Inserts

SECTION 2: INGREDIENTS					
Ingredient Name	CAS #	%	Exposure Limit(s)		
Fiber glass wools Binder may be either:	65997-17-3	50-98	1 fiber/oc workplace exposure guideline (Schuller) 5 mg/m³ respirable fraction (OSHA) 10 mg/m³ total dust (ACGIH)		
Urea extended phenol-formaldehyde resin (cured)	25104-55-6	2-18	Not established		
Or					
Urea extended phenot-melamine- formaldehyde resin (cured)	25212-25-3	2-18	Not established		
Non-woven, AP, FSK, or vinyl facings; or vinyl, acryllo, or latex coatings	None assigned	1~40	Not established		

SECTION 3: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOR: Gold-to-yellow or black fibrous glass blanket, board, or formed shapes with or without non-woven or vinyl facings; no significant odor.

Products designed for high temperature applications (above 177°C/ 350°F), may release gases irritating to the syss, nose and throat during initial heat-up. In tightly confined or poorly ventilated areas, use air supplied respirators during the first heat-up cycles.

Under normal conditions of use, this product is not expected to create any unusual emergency hazards.

inhalation of excessive amounts of dust from the product may cause temporary upper respiratory irritation and/or congestion--remove affected individuals to fresh

Skin irritation may be treated by gently washing affected area with soap and warm water.

Eye irritation may be treated by flushing eyes with large amounts of water. If irritation persists, contact a physician.

in the event of fire, use normal fire fighting procedures to prevent inhalation of smoke and gases.

Potential Health Effects

Summary:

Breathing dust from this product may cause a scratchy throat, congestion, and slight coughing. Getting dust or fibers on the skin, or in the eyes may cause itching, rash, or redness. Breathing large amounts of dust or fibers from this product may lead to chronic health effects as discussed in Section 11 of this material safety data sheet.

Acute (Short-Term) Health Effects:

Dust from this product is a mechanical irritant, which means that it may cause irritation or scratchiness of the throat, and/or itching in the eyes and skin.

Chronic (Long-Term) Health Effects:
Studies have been conducted to determine the long-term health effects of fiber glass. The results of a worker health study that looked at the respiratory health of fiber glass manufacturing workers were published in 1993, and the results indicated no lung disease ("no adverse clinical, functional or radiographic signs of effects"). Studies of fiber glass manufacturing workers have shown a small excess of lung cancer when compared to local control groups. However, there is no evidence that this excess is related to breathing fiber glass. Five previous chronic inhalation studies exposing animals to a special purpose fiber glass have not shown any evidence of disease. Early data from a current ongoing chronic animal inhalation study has shown mesothelloma and fibrosis with exposure to special purpose fiber glass. The fiber glass insulation products listed on this material safety data sheet do not contain special purpose fiber glass. In other fiber glass studies, animals exposed by artificial means (such as fiber glass injected in the lungs or chest cavity) did develop tumors. More detailed information concerning the health effects of fiber glass is described in Section 11 of this material safety data sheet,

Target Organs: Throat, lungs, skin, eyes.

Primary Routes of Entry (Exposure):
Inhalation (breathing dust or fibers), skin, and eye contact.

Medical Conditions Which May Be Aggravated:
Pre-existing chronic respiratory, skin, or eye diseases or conditions.

Symptoms Of Overexposure

Inhalation:

irritation of the upper respiratory tract (scratchy throat), coughing, and congestion may occur in extreme exposures.

Skin:

Temporary irritation (Itching) or redness may occur.

Absorption: Not applicable.

Ingestion:

This product is not intended to be ingested or eaten under normal conditions of use. If ingested, it may cause temporary irritation to the gastrointestinal (GI) tract, especially the stomach.

Temporary irritation (itching) or redness may occur.

SECTION 4: FIRST AID MEASURES

Inhalation:

Remove to fresh air. Drink water to clear throat, and blow nose to remove fibers and dusts.

Wash gently with soap and warm water to remove dust and fibers. Wash hands before eating or using the restroom.

Absorption: Not applicable.

Ingestion:

Product is not intended to be ingested or eaten. If this product is ingested, irritation of the gastrointestinal (GI) tract may occur, and should be treated symptomatically. Rinse mouth with water to remove fibers, and drink plenty of water to help reduce the irritation. No chronic effects are expected following ingestion.

Eve:

Do not rub or scratch your eyes. Dust particles may cause the eye to be scratched. Flush eyes with large amounts of water for 5-15 minutes. If irritation persists, contact a physician.

Notes to Physician:

This product is a mechanical irritant, and is not expected to produce any chronic health effects from acute exposures. Treatment should be directed toward removing the source of irritation with symptomatic treatment as necessary.

SECTION 5: FIRE FIGHTING MEASURES

Flammable Properties:

Explosive Limits:

Flash Point:

Not applicable

LEL:

Not applicable

Method:

Not applicable

UEL:

Not applicable

Flammable Limits:

Not applicable

Autoignition Temperature:

Not determined

Flammable Classification:

Not determined

Decomposition Temperature:

Not determined

Flame Propagation:

Not determined

Unusual Fire/Explosion Hazards:

There is no potential for fire or explosion.

No special procedures are expected to be necessary for this product. Normal fire fighting procedures should be followed to avoid inhalation of smoke and gases.

Extinguishing Media:
Carbon dioxide (CO₂), water, water fog, dry chemical.

SECTION 6: ACCIDENTAL SPILL/RELEASE MEASURES

Containment Procedures:

Pick up large pieces. Vacuum dusts. If sweeping is necessary, use a dust suppressant such as water. Do not dry sweep dust accumulation or use compressed air to clean-up. These procedures will help to minimize potential exposures.

Disposal:

Wastes are not hazardous as defined by the Resource Conservation and Recovery Act (RCRA; 40 CFR 261). Comply with state and local regulations for disposal of fiber glass wool products. If you are unsure of the regulations, contact your local Public Health Department, or the local office of the Environmental Protection Agency (EPA).

SECTION 7: HANDLING AND STORAGE

Storage Handling:
Use protective equipment as described in Section 8 of this material safety data sheet when handling if any uncontained material. Warehouse storage should be in accordance with package directions, if any. Material should be kept dry, and protected from the elements.

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION

Summary:
Protective equipment should be provided as necessary to prevent irritation of the throat, eyes, and skin, and to keep exposures below the applicable exposure limits identified in Section 2.

Eye:

Safety glasses with sideshields are recommended to keep dust and fibers out of the eyes,

Leather or cotton gloves should be worn to prevent skin contact and irritation. Barrier creams may also be used to reduce skin contact and irritation caused by fiber glass.

Réspiratory:
A respirator should be used if ventilation is unavailable, or is inadequate for keeping dust and fiber levels below the applicable exposure limits. In those cases, use a NIOSH-certified disposable or reusable particulate respirator with an efficiency rating of N95 or higher (under 42 CFR 84) when working with this product. For exposures up to five times the established exposure limits use a quarter-mask respirator, rated N95 or higher; and for exposures up to ten times the established exposure limits use a half-mask respirator (e.g., MSA's DM-11, Racal's Delta N95, 3M's 8210), rated N95 or higher.

Operations such as sawing, blowing, tear out, and spraying may generate airborne fiber concentrations requiring a higher level of respiratory protection. For exposures up to 50 times the established exposure limits use a full-face respirator, rated N99 or higher.

Ventilation:

Local exhaust ventilation should be provided at areas of cutting to remove airborne dust and fibers. General dilution ventilation should be provided as necessary to keep airborne dust and fibers below the applicable exposure limits and guidelines. The need for ventilation systems should be evaluated by a professional industrial hygienist, while the design of specific ventilation systems should be conducted by a professional engineer.

Other:

Loose-fitting, long-sieeved clothing should be worn to protect skin from irritation. Exposed skin areas should be washed with soap and warm water after handling or working with fiber glass. Clothing should be washed separately from other clothes, and the washer should be rinsed thoroughly (run empty for a complete wash cycle). This will reduce the chances of fiber glass being transferred to other clothing.

Special Considerations for Repair/Maintenance of Contaminated Equipment:
Use personal protective equipment as discussed above. Where possible, vacuum equipment before repair/maintenance to remove excessive dust and loose fibers.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (°F/°C): Not determined Evaporation Rate (Butyl acetate = 1): Not applicable Melting Point: >704°C/1300°F pH: Not applicable Saturation in Air (%): Not applicable Solids Content: Not applicable Specific Gravity (Water = 1): Varisble Vapor Density (Air = 1): Not applicable Vapor Pressure: Not applicable Viscosity: Not applicable VOCs (g/liter): Not applicable

Volatile by Volume (%): Water Solubility (%):

Apearance and Odor:
Gold-to-yellow or black fibrous glass blanket, board, or formed shapes with or without non-woven or vinyl facings; no significant odor.

SECTION 10: STABILITY AND REACTIVITY

Product is stable.

Hazardous polymerization will not occur.

Reactivity:

This product is not reactive.

Hazardous Decomposition Products:

The decomposition products from this material are those that would be expected from any organic (carbon-containing) material, and are mainly derived from pyrolysis, or burning, of the resin. These decomposition products may include carbon dioxide, carbon monoxide, carbon particles, formaldehyde, and traces of hydrogen cyanide.

SECTION 11: TOXICOLOGICAL AND EPIDEMIOLOGICAL DATA

This product has not been tested as a separate entity. Therefore, the hazards must be evaluated on the basis of the individual ingredients, and those hazards must be assumed to be additive in the absence of complete information. The hazards described in this document have been evaluated based on a threshold of 1.0% for all hazardous ingredients and 0.1% for all carcinogens.

Acute Effects:

The fibers from this product are mechanical irritants and may cause transitory irritation to exposed areas such as eyes, skin, and upper respiratory passages.

The LD_{ss} and LC_{ss} (dose or concentration lethal to 50% of a population of test animals) for this product have not been determined,

Chronic Effects:

in 1993, the results of a study that looked at the respiratory health of fiber glass manufacturing workers were published. When comparing the health of these workers to members of the local communities, the researchers reported, "These results indicate no adverse clinical, functional or radiographic signs of effects of exposure to MMMFs (fiber glass is an MMMF) in these workers." In addition to reporting the current results, the investigators concluded that, "the results of this investigation are consistent with previously reported cross-sectional studies that have failed to find persuasive evidence of respiratory effects of manufacture of MMMF."

A 1990 update of a mortality study of U.S. fiber glass manufacturing workers reported a small but statistically significant excess in respiratory cancer among the workers. This increase in respiratory cancer, however, could not be associated with exposure to fiber glass because no relationship was found between dose response or length of employment and the increase in cancer rates. This study has been expanded, while continuing to monitor the workers' cancer rates, to identify and examine possible factors (e.g., smoking) contributing to the increase in respiratory cancer.

Previous chronic animal inhalation studies have not shown any irreversible disease effects related to building insulation fiber glass exposure. Five previous chronic inhalation studies exposing animals to a special purpose fiber glass have also not shown any evidence of disease. In a chronic animal inhalation study currently underway, animals are being exposed to high airborne levels (250 fibers per cubic centimeter (f/cc); as compared to our workplace exposure guideline of 1.0 f/cc) of two types of fiber glass: special purpose and building insulation. Interim results from this study have shown mesothelloma and fibrosis in the animals exposed to the special purpose fiber. The animals exposed to the building insulation fiber have not shown any evidence of disease. This finding regarding the building insulation fiber presently being tested is consistent with previously completed animal inhalation studies of this same fiber type. In other fiber glass studies, animals which were exposed by artificial means (e.g., implantation and injection) have shown development of tumors.

Data from the artificial exposure studies, along with data from extensive epidemiological studies of fiber glass manufacturing workers, were reviewed by the International Agency for Research on Cancer (IARC) in 1987 and were found to provide inadequate evidence of carcinogenicity in humans. based on the data from the artificial exposure studies in animals, IARC classified glass wool as possibly carcinogenic to humans, Group 2B. Following the IARC Group 2B designation, the National Toxicology Program (NTP) classified glasswool (respirable size) as reasonably anticipated to be a carcinogen. The Occupational Safety and Health Administration (OSHA) has not classified glass wool fibers.

References:

A detailed listing of references on fiber glass health effects can be found in Schuller's publication HSE-64C, "Heath and Safety Aspects of Fiber Glass," available free of charge from the Schuller Product Information Center. Major references used for the information contained in this material safety data sheet are as follows:

"Canadian Environmental Protection Act: Priority Substances List Assessment Report - Mineral Fibres (Man-Made Vitreous Fibres)," 1993.

Enterline, P.E., et al., "Mortality Update of a Cohort of U.S. Man-Made Mineral Fibre Workers," Annals of Occupational Hygiene, 31:625-656, 1987.

Hughes, J.M., et al., "Follow Up Study of Workers Exposed to Man-Made Mineral Fibers," British Journal of Industrial Medicine, 50:658-667, 1993.

"IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: Man-Made Mineral Fibres and Radori," World Health Organization, Lyon, France, Monograph 43, 1988.

Marsh, G., et al., "Mortality Among a Cohort of U.S. Man-Made Mineral Fiber Workers: 1985 Follow-up," Journal of Occupational Medicine, 1990.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity:

Product has not been tested for ecotoxicity.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Summary:
This product is not regulated as a hazardous waste by the U.S. Environmental Protection Agency (EPA)

This product is not regulated as a hazardous waste by the U.S. Environmental Protection Agency (EPA) under Resource Conservation and Recovery Act (RCRA) regulations. Comply with state and local regulations for disposal. If you are unsure of the regulations, contact your local Public Health Department, or the local office of the EPA.

SECTION 14: TRANSPORT INFORMATION

U.S. Department of Transportation Shipping Classification: Not classified a hazardous material.

SECTION 15: REGULATORY INFORMATION

U. S. Regulations

Federal Regulations:

This product has not been classified a carcinogen by the international Agency for Research on Cancer (IARC), the Occupational Safety and Health Administration (OSHA), or the National Toxicology Program (NTP).

Glasswool (respirable size) has been classified by NTP as reasonably anticipated to be a carcinogen. IARC has classified glasswool as possibly carcinogenic to humans. Group 2B. OSHA has not classified glasswool fibers.

The OSHA Permissible Exposure Limits (PELs) identified in Section 2 are based upon the revised PELs of 1988. OSHA has been challenged by the courts to provide more information about its update process. Until these issues are resolved. Schuller will continue to list these PELs.

This product and its components are listed on the Toxic Substances Control Act Chemical Substance Inventory (TSCA).

State Regulations:

California Proposition 65 Substances known to the state to cause cancer: glasswool fibers (airborné particles of respirable size).

Other Environmental Information: There are no chemicals in this product regulated by SARA 313, CERCLA or TSCA12(b).

International Regulations

Canada Domestic Substance List (DSL):
This product and its component parts are listed on the Canada Domestic Substance List.

This material is a class D2A controlled product under Canadian WHMIS Regulations (based on the IARC 28 classification for Man-Made Vitreous Fiber). However, a 1993 Canadian Government report classified fiber glass wool as unlikely to be carcinogenic to humans.

SECTION 16: OTHER INFORMATION

For additional information concerning this product, contact the Schuller Product Information Center at P.O. Box 5108, Danver, CO 80217-5108, or call toll-free (800)654-3103 (outside the U.S., call collect (303)978 - 4900).

MSDS Revision Summary:

Date	MSDS #	Reason
01/01/92	1009-1.0	Format revision
05/15/92	1009-2.0	Company name change; Sect 1: Added products to Trade Name
09/15/92	1009 - 3.0	Sects, 1 & 11, Added SuperDuot Boards to Trade Name; Menufacturer name change
12/15/92	1009 - 3.1	Sects. 1 & 11: Added SuperVane to Trade Names; Updated Regulatory Information
06/15/93	1009-3.2	Sect. 4,11: Editorial changes
12/31/93	1009-3.3	Sect. 1: Header, Product, & Trade Names Sect. 11: Chronic Effects, updated
01/31/94	1009-3.4	Sect. 1: Trade names added: CM-26 (coated); Equipment Spin-Glas+ Board (faced);
		Exact-O-Kote+; Exact-O-Mat+
03/15/94	1009-3.5	Sect. 1: Trade Names revised
06/15/94	1009-3.6	Sect. 3: Emergency Overview
08/01/94	1009-4.0	Sect. 11: Regulatory: NTP/Canadian classification of glasswool fibers (respirable size);
03/01/95	1009-4.1	Conversion to ANSI 16 section format; Section 1 Trade Names: changed Linacoustic® type R to R-300, and added Spiracoustic® Plus and Duct Board Type LP.
06/28/95	1009-4.2	Section t Trade Names: removed Medium Pressure Fiber Glass Duct Board (redundant, see SuperDuct™ Boards); replaced ⊚ with ™ in Spiracoustic line to correct trademark designation; added ⊚ to SuperVane.
09/13/95	1009-4.3	Section 1 Trade Names: added Acoustic Backing Board which was inadvertently removed March 15, 1994.
05/15/96	1009-5.0	Header: replaced logo with current standard and reformatted layout; Section 1 Trade Names: added new products, Insul-SHIELD Black (Coated) and Fabrication Board; Section 2: modified fiber glass wool to fiber glass wools; Sections 3 and 11 Chronic Health Effects: updated with new fiber glass toxicology data; Section 8 Respiratory Protection: modified recommended protection based on 42 CFR Part 84 requirements.
07/19/96	1009-5.1	Section 1 Hazard Label: added FBG-012 (warning label for Micro-Lok® & EcoTherm™ Pipe Insulation); Trades Names: added EcoTherm™ Industrial Pipe Insulation.

Prepared for:
Schuller International, Inc.

Mechanical Insulations Division P.O. Box 5108

Denver, CO 80217-5108

Prepared by:

MTC Health, Safety & Environment Department

P.O. Box 625005 Littleton, CO 80162-5005

As of the date of preparation of this document, the foregoing information is believed to be accurate and is provided in good faith to comply with applicable federal and state law(s). However, no warranty or representation with respect to such information is intended or given.

--- END OF MSDS 1009-5.1 ---

VWR SCIENTIFIC PRODUCTS 1310 GOSHEN PARKWAY WEST CHESTER, PA 19380 TELEPHONE: (610)431-1700

000000000 ATTN HOWARD ASH GROVE 13939

PORTLAND

OR 97203

01-22-97

DEAR CUSTOMER:

ENCLOSED ARE THE MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR THE PRODUCT(S) THAT YOUR COMPANY RECENTLY PURCHASED FROM VWR SCIENTIFIC PRODUCTS. PLEASE FORWARD THESE MSDS(S) TO YOUR SAFETY OFFICER OR OTHER INDIVIDUAL IN YOUR ORGANIZATION RESPONSIBLE FOR IMPLEMENTING THESE REGULATIONS.

"ALL DATA OR INFORMATION REGARDING THE PARTICULAR PRODUCT YOU HAVE PURCHASED FROM VWR SCIENTIFIC PRODUCTS, WHICH IS PROVIDED IN THE ENCLOSED MATERIAL SAFETY DATA SHEET, IS OFFERED GRATUITOUSLY AND IN GOOD FAITH AS ACCURATE, BUT IS FURNISHED WITHOUT GUARANTY. VWR SCIENTIFIC PRODUCTS MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION IN THE MSDS. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, YOU SHOULD PERFORM YOUR OWN INVESTIGATION AND INDEPENDENT VERIFICATION. THE CONDITIONS OF THE USE OF THE PRODUCT, AND THE SUITABILITY OF THE PRODUCT FOR YOUR PARTICULAR PURPOSES, ARE BEYOND THE CONTROL OF VWR SCIENTIFIC PRODUCTS. THUS, ALL RISKS OF THE USE OF THE PRODUCT ARE THEREFORE ASSUMED BY YOU, THE USER, EXCEPT AS TO SUCH WARRANTIES AS MAY BE PUBLISHED BY VWR SCIENTIFIC PRODUCTS, WITH RESPECT TO A PARTICULAR PRODUCT. VWR SCIENTIFIC PRODUCTS EXPRESSLY DISCLAIMS ALL WARRANTIES OF EVERY KIND, AND NATURE, INCLUDING WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE USE OR SUIT-ABILITY OF THE PRODUCT. VWR SCIENTIFIC PRODUCTS SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATEVER NATURE, DIRECTLY OR INDIRECTLY, RESULTING FROM USE OF THE PRODUCT, OR FROM THE PUBLICATION OF USE OF OR RELIANCE UPON DATA CONTAINED IN THE ENCLOSED MSDS. NOTHING IN THE MSDS IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS, OR WHICH EXTEND LICENSES UNDER VALID PATENTS. IF YOU RESELL THE PRODUCT, YOU ARE RESPONSIBLE TO PASS ON TO YOUR CUSTOMER THE INFORMATION CONTAINED IN THE MSDS, AND GIVE TO THEM APPROPRIATE WARNINGS AND SAFE HANDLING INSTRUCTIONS AS NECESSARY TO MAKE THE PRODUCT SAFE FOR THE INTENDED USES BY YOUR CUSTOMER.

THANK YOU,

VWR SCIENTIFIC PRODUCTS

T0: **50**32892272

FROM: VWR Scientific

01-22-97 15:25 p. 3 of 9

01-22-97

PAGE ØØ1

CATALOG NUMBER

EM-SXØ395-1

MSDS FORM-DOC NUMBER

-1 SXØ395

MATERIAL SAFETY DATA SHEET

EM SCIENCE

CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER....:

PREPARATION DATE.: 12/10/92

DATE MSDS PRINTED.: DEC 21, 1992

EM SCIENCE

A DIVISION OF EM INDUSTRIES

P.O. BOX 70

480 DEMOCRAT RD.

GIBBSTOWN, N.J. 08027

INFORMATION PHONE NUMBER.: 609-354-9200

HOURS: MON. TO FRI. 8:30-5 CHEMTREC EMERGENCY NUMBER: 800-424-9300

HOURS: 24 HRS A DAY

CATALOG NUMBER(S):

6392

6394

6395

SXØ395

SXØ397

SXØ398

SX0400 SX0410

CHEMICAL NAME...:

SODIUM CARBONATE, ANHYDROUS

TRADE NAME.....

SODA ASH

CHEMICAL FAMILY..: ALKALI SALT

FORMULA..... 1000 PPM BA IN SOLUTION

MOLECULAR WEIGHT.: 105.99

COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT

CAS #

APPR %

SODIUM CARBONATE

497-19-8

100%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES.

MAY BE HARMFUL IF SWALLOWED.

MAY CAUSE EYE INJURY.

APPEARANCE.....

WHITE; GRANULAR OR POWDER

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

SYMPTOMS OF EXPOSURE:

MSDS (CONTINUED) - SXØ395

PAGE # 1

POSSIBLY HARMFUL IF SWALLOWED. IRRITATING TO EYES, SKIN, RESPIRATORY TRACT; MAY CAUSE INGESTION CAN SEVERELY DAMAGE MUCOUS MEMBRANES AND CAUSE PAIN, VOMITING, DIARRHEA, AND CIRCULATORY COLLAPSE. AVOID SIMULTANEOUS PRESENCE OF SODA ASH AND LIME DUST; THE COMBINATION IN THE PRESENCE OF PERSPIRATION OR MOISTURE WILL CAUSE FORMATION OF CORROSIVE CAUSTIC SODA.

MEDICAL COND. AGGRAVATED BY EXPOSURE: DATA NOT AVAILABLE.

ROUTES OF ENTRY....: INHALATION, INGESTION

CARCINOGENICITY..... THE MATERIAL IS NOT LISTED (IARC, NTP, OSHA) AS CANCER CAUSING AGENT.

4. FIRST AID MEASURES

EMERGENCY FIRST AID:

GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.

SKIN: IMMEDIATELY FLUSH THOROUGHLY WITH LARGE AMOUNTS OF WATER. EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15

MINUTES.

INHALATION: REMOVE TO FRESH AIR: GIVE ARTIFICIAL RESPIRATION IF

BREATHING HAS STOPPED.

INGESTION: DO NOT INDUCE VOMITING: IF CONSCIOUS, GIVE WATER

FREELY AND GET MEDICAL ATTENTION.

5. FIRE FIGHTING MEASURES

FLASH POINT (F)..... NONCOMBUSTIBLE

FLAMMABLE LIMITS LEL (%).: N/A

FLAMMABLE LIMITS UEL (%).: N/A

EXTINGUISHING MEDIA....:

USE ANY SUITABLE FOR ADJACENT MATERIAL.

FIRE FIGHTING PROCEDURES .:

WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING. WEAR FULL FACE SHIELD

FIRE & EXPLOSION HAZARDS.: NONE

6. ACCIDENTAL RELEASE MEASURES

SPILL RESPONSE:

MSDS (CONTINUED) - SXØ395

PAGE # 2

EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL.
WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE /
PERSONAL PROTECTION.
ELIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE
FREE FROM EXPLOSION OR FIRE HAZARDS.
CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE, IF THIS CAN BE DONE
WITHOUT RISK.
TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER
DISPOSAL.
COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING
RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE
QUANTITY AND OTHER REGULATORY DATA.

7. HANDLING AND STORAGE

HANDLING & STORAGE:
KEEP CONTAINER TIGHTLY CLOSED.
STORE IN A COOL, DRY, WELL-VENTILATED AREA.
STORE AWAY FROM MINERAL AND ORGANIC ACIDS.
DO NOT GET IN EYES.
AVOID SKIN CONTACT.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION MATERIAL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD OR WITH ADEQUATE VENTILATION.

PROTECTIVE GLOVES (NEOPRENE, PVC OR EQUIVALENT) SHOULD BE WORN TO PREVENT SKIN CONTACT

SAFETY GLASSES WITH SIDE SHIELDS MUST BE WORN AT ALL TIMES.

WORK / HYGENIC PRACTICES:
WASH THOROUGHLY AFTER HANDLING.
DO NOT TAKE INTERNALLY.
EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

EXPOSURE GUIDELINES

OSHA - PEL:

TWA STEL CL COMPONENT PPM MG/M3 PPM MG/M3 SKIN

SODIUM CARBONATE

MSDS (CONTINUED) - SX0395 PAGE # 3

MATERIALS TO AVOID....:

()WATER

(X)ACIDS

()BASES

()CORROSIVES

()OXIDIZERS

(X)OTHER:

ALUMINUM, FLUORINE, PHOSPHORUS PENTOXIDE, SULFURIC ACID

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

MSDS (CONTINUED) - SX0395 PAGE # 4

TO: 5032892272 FROM: VMR Scientific 01-22-97 15:27

ORL-RAT LDLO: 4090 MG/KG IHL-MUS LC50: 1200 MG/M3/2H IPR-MUS LD50: 117 MG/KG

TOXICOLOGICAL FINDINGS:

TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY PRODUCE ADVERSE REPRODUCTIVE EFFECTS.

CITED IN REGISTRY OF TOXIC EFFECTS OF SUBSTANCES (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA WASTE NUMBERS:

TREATMENT:

MATERIAL DOES NOT HAVE AN EPA WASTE NUMBER AND IS NOT A LISTED WASTE, HOWEVER CONSULTATION WITH A PERMITTED WASTE DISPOSAL SITE (TSD) SHOULD BE ACCOMPLISHED.

ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME...: NON-REGULATED

DOT ID NUMBER..... NONE

14. REGULATORY INFORMATION

−(SCA INVENTORY....

THE CAS NUMBER OF THIS PRODUCT IS LISTED ON THE ISCA INVENTORY.

SARA SARA CERCLA EHS TPQ COMPONENT EHS RQ (302) (LBS) (LBS)

SODIUM CARBONATE

OSHA SARA DEMINIMIS FLOOR LIST FOR SARA 313 COMPONENT 313

(X)

SODIUM CARBONATE

15. OTHER INFORMATION

MSDS (CONTINUED) - SXØ395 PAGE # 5

p. 8 of 9

COMMENTS:

NONE

NFPA HAZARD RATINGS:

HEALTH FLAMMABILITY : 0 REACTIVITY 0

SPECIAL HAZARDS **REVISION HISTORY:**

08/01/84 12/04/86 10/27/87 06/20/88 03/01/91

: = REVISED SECTION N/A = NOT AVAILABLEN/E = NONE ESTABLISHED

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT EM SCIENCE BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILL AND AT THEIR OWN DESCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED. OF MERCHANTABILITY. FITNESS OR OTHERWISE.

PORTIONS COPYRIGHT ARIEL RESEARCH CORPORATION, 1991. RESTRICTED USE CONDITIONS APPLY. SELECTED REGULATORY INFORMATION IN THIS MSDS HAS BEEN DERIVED FROM ARIEL RESEARCH CORPORATION'S INTERNATIONAL CHEMICAL REGULATORY MONITORING SYSTEM (ICRMS). USE OF THIS DATA IS PROVIDED SUBJECT TO THE TERMS OF THE LICENSE AGREEMENT BETWEEN EM INDUSTRIES AND ARIEL RESEARCH CORPORATION. FURTHER DISTRIBUTION IS PROHIBITED WITHOUT AUTHORIZATION.

MSDS - SXØ395

PAGE # 6

VWR SCIENTIFIC PRODUCTS

1310 GOSHEN PARKWAY
WEST CHESTER, PA 19380
TELEPHONE: (610)431-1700

01 005000709 ATTN SAFETY OFFICER ASH GROVE CEMENT

13939 N RIVERGATE BLVD PORTLAND OR 97203

01/23/97

DEAR CUSTOMER:

ENCLOSED ARE THE MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR THE PRODUCT(S) THAT YOUR COMPANY RECENTLY PURCHASED FROM VWR SCIENTIFIC PRODUCTS. PLEASE FORWARD THESE MSDS(S) TO YOUR SAFETY OFFICER OR OTHER INDIVIDUAL IN YOUR ORGANIZATION RESPONSIBLE FOR IMPLEMENTING THESE REGULATIONS.

"ALL DATA OR INFORMATION REGARDING THE PARTICULAR PRODUCT YOU HAVE PURCHASED FROM VWR SCIENTIFIC PRODUCTS, WHICH IS PROVIDED IN THE ENCLOSED MATERIAL SAFETY DATA SHEET. IS OFFERED GRATUITOUSLY AND IN GOOD FAITH AS ACCURATE, BUT IS FURNISHED WITHOUT GUARANTY. VWR SCIENTIFIC PRODUCTS MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION IN THE MSDS. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, YOU SHOULD PERFORM YOUR DWN INVESTIGATION AND INDEPENDENT VERIFICATION. THE CONDITIONS OF THE USE OF THE PRODUCT, AND THE SUITABILITY OF THE PRODUCT FOR YOUR PARTICULAR PURPOSES. ARE BEYOND THE CONTROL OF VWR SCIENTIFIC PRODUCTS. THUS, ALL RISKS OF THE USE OF THE PRODUCT ARE THEREFORE ASSUMED BY YOU. THE USER. EXCEPT AS TO SUCH WARRANTIES AS MAY BE PUBLISHED BY VMR SCIENTIFIC PRODUCTS. WITH RESPECT TO A PARTICULAR PRODUCT. VWR SCIENTIFIC PRODUCTS EXPRESSLY DISCLAIMS ALL WARRANTIES OF EVERY KIND, AND NATURE, INCLUDING WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE USE OR SUIT-ABILITY OF THE PRODUCT. VWR SCIENTIFIC PRODUCTS SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATEVER NATURE, DIRECTLY OR INDIRECTLY, RESULTING FROM USE OF THE PRODUCT. OR FROM THE PUBLICATION OF USE OF OR RELIANCE UPON DATA CONTAINED IN THE ENCLOSED MSDS. NOTHING IN THE MSDS IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS, OR WHICH EXTEND LICENSES UNDER VALID PATENTS. IF YOU RESELL THE PRODUCT, YOU ARE RESPONSIBLE TO PASS ON TO YOUR CUSTOMER THE INFORMATION CONTAINED IN THE MSDS. AND GIVE TO THEM APPROPRIATE WARNINGS AND SAFE HANDLING INSTRUCTIONS AS NECESSARY TO MAKE THE PRODUCT SAFE FOR THE INTENDED USES BY YOUR CUSTOMER.

THANK YOU,

VWR SCIENTIFIC PRODUCTS

 P.O. NUMBER	NUMB ER	DATE	NUMBER	NUMBER
897172	1490457	01/22/97	EM-S X 0 395-1	SX0395

MATERIAL SAFETY DATA SHEET

EM SCIENCE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER

PREPARATION DATE .: 12/10/92 DATE MSDS PRINTED.: DEC 21. 1992

EM SCIENCE

A DIVISION OF EM INDUSTRIES

P.O. BOX 70

480 DEMOCRAT RD.

GIBBSTOWN, N.J. 08027

INFORMATION PHONE NUMBER .: 609-354-9200

HOURS: MON. TO FRI. 8:30-5

CHEMTREC EMERGENCY NUMBER: 800-424-9300

HOURS: 24 HRS A DAY

497-19-8

CATALOG NUMBER(S):

6392

6394

6395 SX0395 SX0397 SX0398

SX 0400 SX0410

SODIUM CARBONATE, ANHYDROUS

TRADE NAME:

CHEMICAL NAME

SODA ASH

CHEMICAL FAMILY ..: ALKALI SALT

FORMULA..... 1000 PPM BA IN SOLUTION

MOLECULAR WEIGHT .: 105.99

2 COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS #	APPR %	
************************		*******	
SODIUM CARBONATE			

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES.

. MAY BE HARMFUL IF SHALLOWED.

MAY CAUSE EYE INJURY.

APPEARANCE:

WHITE; GRANULAR OR PONDER

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

SYMPTOMS OF EXPOSURE:

MSDS (CONTINUED) - SX0395 PAGE # 1

100%

POSSIBLY HARMFUL IF SWALLOWED.

IRRITATING TO EYES, SKIN, RESPIRATORY TRACT; MAY CAUSE EYE BURNS.

*NGESTION CAN SEVERELY DAMAGE MUCOUS MEMBRANES AND CAUSE —AIN, VOMITING, DIARRHEA, AND CIRCULATORY COLLAPSE.

AVOID SIMULTANEOUS PRESENCE OF SODA ASH AND LIME DUST; THE COMBINATION IN THE PRESENCE OF PERSPIRATION OR MOISTURE WILL CAUSE FORMATION OF CORROSIVE CAUSTIC SODA.

MEDICAL COND. AGGRAVATED BY EXPOSURE: DATA NOT AVAILABLE.

ROUTES OF ENTRY....:
INHALATION, INGESTION

CARCINOGENICITY.....:
THE MATERIAL IS NOT LISTED (IARC, NTP, OSHA) AS CANCER CAUSING AGENT.

4. FIRST AID MEASURES

EMERGENCY FIRST AID:

GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.

SKIN: IMMEDIATELY FLUSH THOROUGHLY WITH LARGE AMOUNTS OF WATER.

EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15

MINUTES.

INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED.

NGESTION: DO NOT INDUCE VOMITING: IF CONSCIOUS, GIVE WATER FREELY AND GET MEDICAL ATTENTION.

5. FIRE FIGHTING MEASURES

FIRE FIGHTING PROCEDURES:
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING.
WEAR FULL FACE SHIELD

FIRE & EXPLOSION HAZARDS .: NONE

6. ACCIDENTAL RELEASE MEASURES

SPILL RESPONSE:

MSDS (CONTINUED) - SX0395 PAGE # 2

EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL. WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE / PERSONAL PROTECTION.

TLIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE REE FROM EXPLOSION OR FIRE HAZARDS.

CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE. IF THIS CAN BE DONE WITHOUT RISK.

TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DI SPOSAL .

COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER REGULATORY DATA.

7. HANDLING AND STORAGE

HANDLING & STORAGE:

KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED AREA. STORE AWAY FROM MINERAL AND ORGANIC ACIDS. DO NOT GET IN EYES. AVOID SKIN CONTACT.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

VENTILATION. RESPIRATORY PROTECTION. PROTECTIVE CLOTHING. EYE PROTECTION MATERIAL SHOULD BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD OR WITH ADEQUATE VENTILATION. PROTECTIVE GLOVES (NEOPRENE, PVC OR EQUIVALENT) SHOULD BE WORN TO PREVENT SKIN CONTACT SAFETY GLASSES WITH SIDE SHIELDS MUST BE WORN AT ALL TIMES.

WORK / HYGENIC PRACTICES:

. WASH THOROUGHLY AFTER HANDLING.

DO NOT TAKE INTERNALLY.

EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

EXPOSURE GUIDELINES

OSHA - PEL:

STEL CL TWA MG/M3 MG/M3 PPM PP M MG/M3 COMPONENT PPM SKIN SODIUM CARBONATE

MSDS (CONTINUED) - SX0395 PAGE # 3

ACGIH - TLV: AHT STEL CL PPM MG/M3 PPM MG/M3 **TMPONENT** PPM MG/M3 SKIN ------SODIUM CARBONATE 9. PHYSICAL AND CHEMICAL PROPERTIES BOILING POINT (C 760 MMHG) .: DECOMPOSES MELTING POINT (C) 851C SPECIFIC GRAVITY (H20 = 1) .: 2.53 VAPOR PRESSURE (MM HG): N/A PERCENT VOLATILE BY VOL (%): N/A VAPOR DENSITY (AIR = 1)....: N/A EVAPORATION RATE (BUAC = 1): N/A SOLUBILITY IN WATER (%)...: 22 APPEARANCE WHITE: GRANULAR OR POWDER 10. STABILITY AND REACTIVITY STABILITY YES HAZARDOUS POLYMERIZATION: DES NOT OCCUR HAZARDOUS DECOMPOSITION :: CO2. NA20 CONDITIONS TO AVOID....: CONTACT WITH STRONG ACID MAY RESULT IN VIOLENT REACTION. STARTS TO DECOMPOSE, LOSING CO2, AT 400C. MATERIALS TO AVOID: ()WATER (X) ACIDS - ()BASES ()CORROSIVES ()OXIDIZERS (X)OTHER: ALUMINUM, FLUORINE, PHOSPHORUS PENTOXIDE, SULFURIC ACID 11. TOXICOLOGICAL INFORMATION TOXICITY DATA:

MSDS (CONTINUED) - SX0395

Appendix33-001525

PAGE # 4

ORL-RAT LDLO: 4090 MG/KG IPR-MUS LD50: 117 MG/KG IHL-MUS LC50: 1200 MG/M3/2H

" "ICOLOGICAL FINDINGS:

ESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY PRODUCE ADVERSE REPRODUCTIVE EFFECTS.

CITED IN REGISTRY OF TOXIC EFFECTS OF SUBSTANCES (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA WASTE NUMBERS:

TREATMENT:

MATERIAL DOES NOT HAVE AN EPA WASTE NUMBER AND IS NOT A LISTED WASTE, HOWEVER CONSULTATION WITH A PERMITTED WASTE DISPOSAL SITE (TSD) SHOULD BE ACCOMPLISHED.

ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME ...:
NON-REGULATED

DOT ID NUMBER..... NONE

14. REGULATORY INFORMATION

TSCA INVENTORY:

THE CAS NUMBER OF THIS PRODUCT IS LISTED ON THE TSCA INVENTORY.

ARAZ

COMPONENT.	EHS (302)	EHS TPQ (LBS)	RQ (LBS)
SODIUM CARBONAT	E	- حق- حق- چند خود چود چود چود استانات خانه خانه خانه خانه خانه خانه خانه خانه	<u>कों के को की की को की की की की को को को की को </u>
COUDOMENT	OSHA	SARA	DEMINIMIS
COMPONENT	FLOOR LIST	313	FOR SARA 313 (%)

SARA

SODIUM CARBONATE

15. OTHER INFORMATION

MSDS (CONTINUED) - SX0395

PAGE # 5

CERCLA

COMMENTS:

NONE

NEPA HAZARD RATINGS:

''EALTH : 1 LAMMABILITY : 0 REACTIVITY : 0 SPECIAL HAZARDS

REVISION HISTORY:

08/01/84 12/04/86 10/27/87 06/20/88 03/01/91

= REVISED SECTION N/A = NOT AVAILABLEN/E = NONE ESTABLISHED

THE STATEMENTS CONTAINED HEREIN ARE DEFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT EM SCIENCE BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILL AND AT THEIR OWN DESCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL. WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE.

PORTIONS COPYRIGHT ARIEL RESEARCH CORPORATION. 1991. RESTRICTED USE CONDITIONS APPLY. SELECTED REGULATORY INFORMATION IN THIS MSDS HAS BEEN DERIVED FROM ARIEL RESEARCH CORPORATION'S INTERNATIONAL CHEMICAL REGULATORY MONITORING SYSTEM (ICRMS). USE OF THIS DATA IS PROVIDED SUBJECT TO THE TERMS OF THE LICENSE AGREEMENT BETWEEN EM INDUSTRIES AND ARIEL RESEARCH CORPORATION. FURTHER DISTRIBUTION IS PROHIBITED WITHOUT AUTHORIZATION.

MSDS - SX0395 PAGE # 6

Material Safety Data Sheet for Agricultural Lime

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Agricultural Lime

Chemical Family: Primarily calcium carbonate which may contain a minor amount of calcium oxide and

calcium hydroxide.

Revision Date: March, 1997

Section II - Hazardous Ingredients

	CAS Number	OSHA PEL	1994-1995 ACGIH TLV
Calcium carbonate, CaCO3	1317-65-3	Total dust, 15 mg/m ³ Respirable fraction, 5 mg/m ^{3**}	10 mg/m³*
Calcium hydroxide, Ca(OH) ₂	1305-62-0	5 mg/m³	5 mg/m³
Calcium oxide, CaO	1305-78-8	5 mg/m³	2 mg/m³

^{*}Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

Agricultural Lime can contain quartz >0.1%. The OSHA PEL for quartz is $\frac{10\text{mg/m}^3}{\text{m}^3}$ respirable dust only. $\frac{8\text{ SiO}_2+2}{\text{m}^3}$

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m³.

ACGIH

American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL

Permissible Exposure Limit

TLV

Threshold Limit Value

^{**}Unless contains > 1% crystalline silica (quartz)

Section III - Physical/Chemical Characteristics

Chemical Family:

Inorganic Base

Specific Gravity:

Approximate range 2.3 to 2.60

Vapor Pressure(mm Hg): 0

Vapor Density:

(Air=1) NA

Evaporation Rate:

NA

Solubility in Water:

0.0014% (25°C)

Appearance and Odor: **Melting Point:**

Soft white to dark grey powder or granules; faint odor Calcium hydroxide-decomposes above 600°C

Calcium carbonate-decomposes above 900°C

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Agricultural Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Agricultural Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or

UEL: NA

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See

Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Agricultural Lime can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has also determined that there is a link between silica exposure and cancer.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

- Inhalation: corrosive 1.
 - Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance

allows further penetration that may continue for several days.

b. Chronic exposure: Bronchial irritation with chronic cough are common.

Section V - Health Hazard Data - (Continued)

- c. First aid: Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.
- 2. Skin contact: corrosive
 - a. Acute exposure: The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
 - b. Chronic exposure: A chronic dermatitis may follow repeated contact.
 - c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
 - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
 - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
 - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Quartz listed as an OSHA carcinogen: NO By NTP: YES By IARC: YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling:

Avoid generation of excessive dust.

Storing:

Protect against physical damage and store in dry place away from water or moisture.

Section VIII - Control Measures

Respiratory Protection: A NIOSH approved respirator with dust filtering capability must be used to control below PELs and TLVs.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes; use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

ACTORIES &

NERALS

CORPORATION
P.O. BOX 1938
SALINAS, CALIFORNIA 93902

No. 5537

SHIP TO .

ASHGROVE CEMENT ATTENTION: GARY WRIGHT 13939 NORTH RIVER GATE ROAD PORTLAND, OR 97203

Natividad Plant

PREPAID XX			COLLECT			SAMPLE		-97	
RAIL	TR	TRUCK ROUTING B/L NUMBER UPS		B/L NUMBER	CAR NI	JMBER	S-1378		
QUANTITY	NO PALLETS	PALLET	WEIGHT PER PC.		DESCRIPTION	AND TYPE		NET WEIGHT	
	pkg.			CRUDE DOLOMET	E, #10AG			18#	
				included in	packing slip [Data Sheet & MSD\$	5		er place aggress de minimum sono en construcción de la construcción de
		a.							
-			Application of the spiritual property of the						
	Assistantian designation of the control of the cont	egengegen eine eine gestellt g	opporation of the control of the con	-poologishirany y					
		SOBPONE CONTRACTOR CON	edekişkirinin in inderesi adazısı perinden edekişkirin edekişkirin edekişkirin edekişkirin edekişkirin edekişk	emengiji: jayaytemengistaa di siji				A CONTRACTOR OF THE CONTRACTOR	godin, i jugara jug
design to the second se									
TARE V	VEIGHT	•							
				LBS			то	TAL NET	18#
~	P	ACKAGI ALLETS	NG @	LBS.		35.			MIT BY CONTRACTOR OF THE STATE
SPECIAL				PING	SERAW		PAI	RT SHIPMEN	WENT



MATERIAL SAFETY DATA SHEET

ADDRESS

: 1852 Rutan Drive

LABEL NO.: 1077

MSDS NO.: 0253-6

Livermore, California 94550

PRODUCT NAME : DOLOMITE: 1x4; 1x2; 7/8x5/8; 5/8x3/8;

DATE

: August 8, 1996

1/4x1/8; 11x16; 3/8 Roofing Rock; #7 AG;

#10 AG; #65 AG; #100 Dolowhite; #200 Dolowhite; EMERGENCY PHONE: (510) 449-5010

#325 Dolomite (WMB); CBM; Commercial #7;

D220; D307; Dolomark; Dolosand 100;

DOT ID NUMBER : NAP

Glass Grade (all types); Pool Deck (all types)

Pool Grade (all types); Omega Select 16; Redi-Mag

INGREDIENTS I.

Exposure Limits

SARA TITLE

1995-96

1910.1000

III, SECTION

Ingredient

% CAS Number ACGIH TLV's (TWA) OSHA PEL's (TWA) 313 REPORTABLE

Crystalline silica as quartz

<1 14808-60-7 0.1 mg/m³

 $0.1 \, \text{mg/m}^3$

Dolomite

>99 16389-88-1 NAV

NAv

No No

II. PHYSICAL DATA

~~~~

APPEARANCE : Granular, dry

COLOR: White to lt. gray SPECIFIC GRAVITY (gm/cc): 2.0 - 3.5

BOILING POINT: NAp MELTING POINT: NAP

ODOR : None

SOLUBILITY IN WATER (%) : Nil

pH : NAp

VAPOR PRESSURE (mm Hg) : NAp

III. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: Respirator approved by NIOSH/MSHA and adequate for contaminant concentrations

encountered.

HAND PROTECTION

: Impervious gloves are recommended.

EYE PROTECTION

: Safety glasses are recommended.

OTHER

: Local exhaust recommended to maintain exposures below TLV's and PEL's.

IV. EMERGENCY MEDICAL PROCEDURES

SKIN:

Wash with soap and plenty of water.

EYES:

Irrigate immediately with copious amounts of water for 15 minutes. Consult physician if

necessary.

INHALATION: Remove to fresh air.

NAp = Not Applicable

NAv = Not Available



# **PRODUCT INFORMATION**

## HIGH PURITY DOLOMITIC PRODUCTS

## AGRICULTURAL LIMING GRADE DOLOMITE

Agricultural Dolomite Liming products are mineral soil conditioners composed principally of calcium and magnesium carbonate. All of National agricultural dolomite lime grades are suitable for direct soil application, without caustic effects, for the correction of soil pH, and to help restore the essential plant micronutrients, calcium and magnesium. #7 Ag and #10 Ag are commonly used as ingredients in various commercial fertilizer mixes.

The rate at which liming materials react with the soil is influenced by both their particle size and by their chemical makeup. #65 Ag combines the desirable effects of fine particle size with a slightly altered chemical composition to achieve a higher acid neutralizing effect than is possible with other sources, such as limestone, dolomite, shell meal, marl or sugar beet lime. The heat process used in the production of #65 Ag converts a small amount of the dolomite to burned lime, which has a very high acid neutralizing value, commonly referred to as its calcium carbonate equivalent, or CCE. When applied to the soil, the burned lime portion of the #65 Ag reacts quickly to provide an immediate neutralizing effect, while the unburned portion reacts more gradually for long-term neutralizing.

National's line of liming products is well established in agricultural markets in California, Oregon, Washington and Hawaii. #65 Ag, sold under the trade name "Redi-Mag", is sacked in easy-to-handle, 40 pound sacks, which are well suited for the consumer market.

## Chemical Characteristics (Min.)

|                                          | #7 Ag | #10 Ag | #65 Ag | Redi-<br>Mag | (Interim)<br>#70 Ag | (Interim)<br>#90 Ag |
|------------------------------------------|-------|--------|--------|--------------|---------------------|---------------------|
| Calcium Carbonate (CaCO <sub>3</sub> )   | 54.7% | 54.7%  | 46.0%  | 46.0%        | 45.4%               | 50.4%               |
| Magnesium Carbonate (MgCO <sub>3</sub> ) | 42.6% | 42.6%  | 38.5%  | 38.5%        | 32.5%               | 37.7%               |
| Calcium (Ca) as elemental                | 21.9% | 21.9%  | 22.7%  | 22.7%        | 18.2%               | 20.2%               |
| Magnesium (Mg) as elemental              | 12.3% | 12.3%  | 11.8%  | 11.8%        | 9.4%                | 10.9%               |
| Calcium Carbonate Equivalent             | 103%  | 103%   | 113%   | 113%         | 77%                 | 90%                 |
| Moisture (max.)                          | 2.0%  | 2.0%   | 2.0%   | 2.0%         | 7.0%                | 7.0%                |
| Oregon Lime Score                        | 7     | 61     | 107    | 107          | 72                  | 88                  |
| Derived from Dolomite                    | Yes   | Yes    | Yes    | Yes          | Yes                 | Yes                 |

All Products Shipped From 11771 Old Stage Road, Salinas, California For Information Contact: P.O. Box 1938, Salinas, California 93902 or Telephone (408) 449-7206, (408) 449-9117, Fax (408) 443-5599

## National Refractories and Minerals Salinas, California

3/12/97

#10 Dolomite

CCE

100.5

Moisture 0.13

| 40000<br>40000 | ndividual | Cumulative |
|----------------|-----------|------------|
| F              | Retained  | Retained   |
| 10             | 0.0       | 0.0        |
| 20             | 26.8      | 26.8       |
| 40             | 30.8      | 57.6       |
| 100            | 30.7      | 88.3       |

Oregon Lime Score

70

# Material Safety Data Sheet for Agricultural Lime

## Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Agricultural Lime

Chemical Family: Primarily calcium carbonate which may contain a minor amount of calcium oxide and calcium hydroxide.

Revision Date: March, 1997

## Section II - Hazardous Ingredients

|                                        | / CAS<br>/Number | OSHA PEL                                                                     | 1994-1995<br>ACGIH TLV |
|----------------------------------------|------------------|------------------------------------------------------------------------------|------------------------|
| Calcium carbonate, CaCO <sub>3</sub>   | 1317-65-3        | Total dust, 15 mg/m <sup>3</sup> Respirable fraction, 5 mg/m <sup>3</sup> ** | 10 mg/m³*              |
| Calcium hydroxide, Ca(OH) <sub>2</sub> | 1305-62-0        | 5 mg/m³                                                                      | 5 mg/m³                |
| Calcium oxide, CaO                     | 1305-78-8        | 5 mg/m³                                                                      | 2 mg/m³                |

<sup>\*</sup>Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

\*\*Unless contains > 1% crystalline silica (quartz)

Agricultural Lime can contain quartz >0.1%. The OSHA PEL for quartz is 10mg/m<sup>3</sup> respirable dust only. % SiO<sub>2</sub>+2

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m<sup>3</sup>.

ACGIH American Conference of Governmental Industrial Hygienists

OSHA Occupational Safety and Health Administration

PEL Permissible Exposure Limit
TLV Threshold Limit Value

# Section III - Physical/Chemical Characteristics

Chemical Family:

Inorganic Base

Specific Gravity:

Approximate range 2.3 to 2.60

Vapor Pressure(mm Hg): 0

0

Vapor Density:

(Air=1) NA

Evaporation Rate:

NA

Solubility in Water:

0.0014% (25°C)

Appearance and Odor:

Soft white to dark grey powder or granules; faint odor

Melting Point:

Calcium hydroxide-decomposes above 600°C Calcium carbonate-decomposes above 900°C

# Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Agricultural Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Agricultural Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or

fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

# Section V - Health Hazard Data

Agricultural Lime can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has also determined that there is a link between silica exposure and cancer.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

- 1. Inhalation: corrosive
  - a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance

allows further penetration that may continue for several days.

b. Chronic exposure: Bronchial irritation with chronic cough are common.

# Section V - Health Hazard Data - (Continued)

c. First aid: Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

#### 2. Skin contact: corrosive

- a. Acute exposure: The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.
- c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
  - Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Quartz listed as an OSHA carcinogen: NO By NTP: YES By IARC: YES

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

# Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

# Section VII - Precautions for Safe Handling and Use

#### Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling:

Avoid generation of excessive dust.

Storing:

Protect against physical damage and store in dry place away from water or moisture.

#### Section VIII - Control Measures

Respiratory Protection: A NIOSH approved respirator with dust filtering capability must be used to control below PELs and TLVs.

**Firefighting:** Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes; use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

**Protective Gloves:** Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

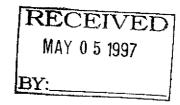
National Sanitary Supply Co. P.O. Box 61126 Los Angeles, Ca 90061 (213) 770-1970

151

4/28/97 2813 TOTONCHY, TALAL 193150

ASH GROVE CEMENT WEST, INC.

13939 N RIVERGATE BLVD PORTLAND OR 97203-6608



Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal OSHA Hazard Communication Final Standard 29 CFR 1910. 1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnessess in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerely,

Maria F. Frias Executive Administration

Page: 1 of 3

NATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street Los Angeles, California 90061 Emergency No. 1-800-535-5053 (INFOTRAC)

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: SUPER SHINE AEROSOL Product Code: 136-1 Type Of Product: WAX POLISH

Date Issued: 04/12/93 Supercedes: 10/02/92 National Item#: 3221XX

CAS # SARA OSHA PEL ACGIH III LIST (PPM) TLV (PPM) SECTION 2. INGREDIENTS PETROLEUM DISTILLATE 8052-41-3 NO 100 100 75-28-5 74-98-6 NO 800 800 BLEND 1000 ΝO 1000

#### SECTION 3. PHYSICAL DATA

Vapor Density (air=1): NE
Evaporation Rate: NE
Specific Gravity (H2O=1)CONCENTRATE DNLY: 0.980
Boiling Point F: N/A
Solubility in Water: PARTIAL
Water Reactive: NO
Vapor pressure PSIG @ 70F(AEROSOLS): MAX. 60
Vapor Pressure (Non-Aerosols)(mm Hg and Temperature: NA
Appearance and Odor: CREAM COLOR, WITH LEMON FRAGRANCE.

#### Section 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point and Method Used (Non-Aerosols): NA
Auto Ignition Temperatue, F: N/E
Flammable Limits in Air, Volume %: LOWER (LEL) UPPER (UEL)
Extinguisher Media: FOAM, DRY CHEMICAL, CARBON DIOXIDE, WATER FOG.
Special Firefighting Procedures: SELF CONTAINED BREATHING APPARATUS.
Unusual Fire And Explosion Hazards: DO NOT EXPOSE AEROSOLS TO TEMPERATURES
ABOVE 130 F OR THE CONTAINER MAY RUPTURE.

#### SECTION 5. REACTIVITY DATA

Stability: STABLE
Conditions to Avoid: OPEN FLAME, WELDING ARCS, HEAT,
Incompatibility (materials to avoid): STRONG OXIDI:
Hazardous Decomposition: CO, CO2.
Hazardous Polymerization: WILL NOT OCCUR SPARKS. OXIDIZERS.

Conditions to Avoid: OPEN FLAME, WELDING ARCS, HEAT, SPARKS.

MATERIAL SAFETY DATA SHEET

Product Name: SUPER SHINE AEROSOL National Item# 3221 Date Issued: 04/12/93

#### SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES

Steps to Be Taken If Material Is Spilled or Released: ABSORB WITH SUITABLE MEDIUM. INCINERATE OR LANDFILL ACCORDING TO LOCAL, STATE, OR FEDERAL REGULATIONS. DO NOT FLUSH TO SEWER.

Waste Disposal Methods: AEROSOL CANS WHEN VENTED TO ATMOSPHERIC PRESSURE THROUGH NORMAL USE, POSE NO DISPOSE HAZARD.

Precautions to Taken in Handling and Storage: DO NOT PUNCTURE OR INCINERATE CONTAINERS. DO NOT STORE AT TEMPERATURES ABOVE 130F.

Other Precautions and/or Special Hazards: AVOID FOOD CONTAMINATION. KEEP OUT OF REACH OF CHILDREN. AVOID PLASTICS. REMOVE IGNITION SOURCES. AVOID BREATHING VAPORS.

#### SECTION 7. HEALTH HAZARD DATA

Primary Routes of Entry: INHALATION, SKIN ABSORPTION

Acute Effects: Inhalation: EXCESSIVE INHALATION OF VAPORS CAN BE HARMFUL AND MAY HEADACHE, DIZZINESS, ASPHYXIA. ANESTETIC EFFECTS AND POSSIBLE AND MAY CAUSE

UNCONSCIOUSNESS

UNCONSCIOUSNESS.

Eye Contact: SLIGHT IRRITATION.

Skin Contact: PRESSIBLE MILD IRRITATION DUE TO DEFATTING OF SKIN.

Ingestion: POSSIBLE CHEMICAL PNEUMONITIS IF ASPIRATED INTO LUNGS. NAUSE,

Chronic Effects: EFFECTS DUE TO EXCESSIVE EXPOSURE TO THE RAW MATERIALS

OF THIS MIXTURE) PETROLEUM DISTILLATE HAS CAUSED KIDNEY INJURY IN

LABORATORY ANIMALS. STOMACH AND INTESTINE IRRITANT.

Medical Conditions Generally Aggravated by Exposure: MAY AGGRAVATE

EXISTING EYE, SKIN, OR UPPER RESPIRATORY CONDITIONS. NAUSEA.

#### SECTION B. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact: FLUSH WITH WATER FOR 15 MINUTES. IF IRRITATED, SEE MEDICAL ATTENTION.

Skin Contact: WASH WITH SOAP AND WATER. IF IRRITATED, SEE MEDICAL ATTENTION. Inhalation: REMOVE TO FRESH AIR. RESUSCITATE IF NECESSARY. GET MEDICAL ATTENTION.

DRINK TWO LARGE GLASSES OF WATER. GET IMMEDIATE MEDICAL Ingestion: ATTENTION.

Page: 2 of 3

MATERIAL SAFETY DATA SHEET

Product Name: SUPER SHINE AEROSOL National Item# 3221

Date Issued: 04/12/93

Page: 3 of 3

#### SECTION 9. SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify Type): IF VAPOR CONC. EXEEDS TLV, USE RESPIRATOR APPROVED BY U.S. BUREAU OF MINES FOR ORGANIC VAPOR. Protective Gloves: LATEX, IF SKIN EASILY IRRITATED. Eyes Protection: SAFETY GLASSES RECOMMENDED. Ventilation Requirements: ADEQUATE VENTILATION TO KEEP VAPOR CONCENTRATION BELOW TLV.

Other Protective Clothing and Equipment: NONE Hygienic Work Practices: WASH WITH SOAP AND WATER BEFORE HANDLING FOOD. REMOVE CONTAMINATED CLOTHING.

#### SECTION 10. ADDITIONAL INFORMATION PRECAUTIONS

HMIS RATING: HEALTH -2 FLAMMABILITY -2 REACTIVITY -0 PERSONAL PROTECTION -B

REACTIVITY -0 NFPA RATING: HEALTH -2 FLAMMABILITY-2 SPECIAL -0

Chronic -NO Fire -YES Press. Release -YES Acute -YES Reactive -NO

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.





ZEP MANUFACTURING COMPANY P.O. BOX 2015

ATLANTA, PRECEIVED

MAY 0 8 1997

ASHGROVE CEMENT WEST IND (366) 13939 N RIVERGATE BLVD PORTLAND, OR 97203

# MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

04/30/97

**ISSUE DATE: 01/26/96** 

SUPERSEDES:

ZEP SPIRIT II PRODUCT NO.: 0679

Cleanar - Disinfectant - Deodorant

CCCCCTC

SECTION I - EMERGENCY CONTACTS

**TELEPHONE:** (404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

(770) 439-4200 (770) 432-2873

NON-OFFICE HOURS, WEEKENDS AND HOLIDAYS, PLEASE CALL YOUR

LOCAL POISON CONTROL

(770) 432-2873 (770) 424-4789 (770) 392-1480 (770) 455-8160 (770) 552-8836

TRANSPORTATION EMERGENCY:

(770) 922-0923

CHEMTREC: 1-800-424-9300 DISTRICT OF COLUMBIA:

**TOLL-FREE - ALL CALLS RECORDED** 

(202) 483-7616 ALL CALLS RECORDED

#### SECTION II - HAZARDOUS INGREDIENTS

| DESIGNATIONS                                                                                              | (PPM) | (SEE REVERSE) | PROD. |
|-----------------------------------------------------------------------------------------------------------|-------|---------------|-------|
| @ * DIETHYLENE GLYCOL MONOBUTYL ETHER * 2-(2-butoxyethoxy)-ethanol; butyl carbitol; CAS# 112-34-5; RTECS# | N/D   | EIR           | 5-15  |
| KJ9100000; OSHA PEL-N/D                                                                                   |       |               |       |
| * TETRASODIUM ETHYLENEDIAMINE TETRAACETATE * ethylenedinitrilo tetraacetic acid, tetrasodium salt; EDTA;  | N/D   | IRR           | < 5   |
| CAS# 64-02-8; RTECS# AH4025000; OSHA PEL N/D                                                              |       |               |       |

@ Identifies chemicals listed under SARA-Section 313 for release reporting

#### SECTION III - HEALTH HAZARD DATA

Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

This product, particularly in its concentrated form, may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or blistering. Overexposure by inhalation may cause respiratory irritation. Exposure may aggravate existing skin disorders such as dermatitis.

hronic Effects of Overexposure:

beated or prolonged skin contact may produce chronic inflammation or dermatitis, characterized by redness, scaling or ltching. None of the ingredients are listed as croinogens by IARC, NTP, or OSHA.

Est'd PEL/TLV: Not established

Primary Routes of Entry: Inh, Skin.

#### HMIS Codes: HEALTH 2;FLAM. 0;REACT. 0;PERS. PROTECT. B ;CHRONIC HAZ. YES

FIRST AID PROCEDURES:

Skin: Flush contaminated skin with plenty of water. Consult a physician if irritation develops.

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower tids. Get medical attention at once. Move exposed person to fresh air. If irritation persists, get medical attention promptly. Eves:

inhale:

Ingest: If swallowed, do not induce vomiting, if vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

#### SECTION IV - SPECIAL PROTECTION INFORMATION

Protective Clothina: Eve Protection:

Wear nitrile gloves or use gloves with demonstrated resistance to the ingredients in this product.

Respiratory Protection:

Wear tight-fitting splash-proof safety glasses especially if contact lenses are worn. No extra measures are needed if ventilation is adequate.

Ventilation:

Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

#### SECTION V - PHYSICAL DATA

Boiling Point (°F): Percent Volatile by Volume (%): 97

~ 220

Specific Gravity: 1.006 Vapor Density (air = 1): N/A

Vapor Pressure (mmHq): Evaporation Rate (WATER = 1):

pH (use dilution of ):

N/A 10 N/A

Solubility in Water: Appearance and Odor: A THIN, CLEAR GREEN LIQUID WITH A CITRUS FRAGRANCE.

COMPLETE

pH (concentrate):

#### SECTION VI - FIRE AND EXPLOSION DATA

Flash Point (°F) (method used): None (TCC Flammable Limits:

LEL N/A UEL N/A Noncombustible.

**Extinguishing Media:** Special Fire Fighting: Unusual Fire Hazards:

Fire exposed drums should be cooled with stream of water. Wear self-contained positive pres, breathing apparatus.

#### ZEP MANUFACTURING COMPANY

# MATERIAL SAFETY DATA SHEET PAGE 2

SECTION VII - REACTIVITY DATA

Stability:

Incompatibility (avoid):

Stable

Heat, sunlight, strong oxidizers; and acids.

Will not occur.

Polymerization: Hazardous Decomposition:

Carbon dioxide, carbon monoxide, and other unidentified organic compounds.

#### SECTION VIII - SPILL AND DISPOSAL PROCEDURES

#### Steps to be Taken in Case Material is Released or Spilled:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on inert absorbent material (eg Zep-Q-Zorb). Pick up and place residue in a suitable waste. container or, if permitted, flush to sewer. Thoroughly rinse spill area with water.

Waste Disposal Method:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg. Zep-O-Zorb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

**RCRA Hazardous Waste Numbers: N/A** 

#### SECTION IX - SPECIAL PRECAUTIONS

#### Precautions to be Taken When Handling and Storing:

Store tightly closed container in a dry area at temps, between 40-120 degrees F. Keep product away from skin and eyes. Do not breathe spray mists or vapors. Clothing or shoes which become contaminated with substance should be removed promptly and not reworn until thoroughly cleaned. Keep out of the reach of children.

#### SECTION X - TRANSPORTATION DATA

DOT Label/Placard: NONE

DOT PROPER SHIPPING NAME Small sizes one gallon or less may be shipped as ORM-D: NONE

**DOT Hazard Class: N/A** 

DOT I.D. Number: N/A

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container) : NONE

#### NOTICE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your liles. Zeo Manufacturing is concerned for your health and safety. Zep manufacturing is concerned for your health and safety, Zep products can be used safety with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety

As a lurther word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pres-surize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of lightion; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers must be sent to a drum reconditioner before reuse.

# TERMS AND ABBREVIATIONS USED IN THE MSDS: BY SECTION ALPHABETICALLY:

#### SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.
CAS #; Chemical Abstract Services Registry Number

universally accepted numbering system for chemical sub-

CBL: Combustible · At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester. CNS; Central Nervous System depressant reduces the activ-

Ity of the brain and spinal cord.

COR; Corrosive · Causes Irreversible alterations in living

tissue (e.g. burns).
DESIGNATIONS; Chemical and common names of hazardous

Ingredients.

EIR: Eye firitant Only - Causes reversible reddening and/or

inflammation of eye tissues.

EXPOSURE LIMITS: The time weighted average (TWA) air-

borne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACCIH TIV's, and OSHA PEI's (TWA, STEL and ceiling

ACGIH: American Conference of Governmental Industrial Hygienists.
CEILING: The concentration that should not be exceeded

in the workplace during any part of the working exposure. OSHA; Occupational Safety and Health Administration

PEL: Permissible Exposure Limit- A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.

PPM: Parts per million - unit of measure for exposure

limits

(S) SKIN; Skin contact with substance can contribute to

overall exposure. STEL; Short Term Exposure Limit- Maximum concentration for a continuous 15-minute exposure period.

TLV: Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.

FBL: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present as lested with a closed cup tester.

HAZARDOUS INGREDIENTS: Chemical substances deter-

mined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200

HTX; Highly toxic - the probable lethal dose for 70 kg (150 Ib.) man and may be approximated as less than 6 teaspoons (2 tablespoons).

IRR; Irritant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes.

N/A; Not Applicable - Category is not appropriate for this

product. N/D; Not Determined - Insufficient information for a deter-

mination for this item.

RTECS#: Registry of Toxic Effects of Chemical Substances
- an unreviewed listing of published toxicology data on

SARA; Superfund Amendments and Reauthorization Act -

Section 313 designates chemicals for possible reporting for the Toxics Release Inventory. SEN; Sensitizer · Causes allergic reaction after repeated

TOX; Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

#### SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT: An adverse effect on the human body from a single exposure with symptoms developing almost imme-

diately after exposure or within a relatively short time. CHRONIC EFFECT; Adverse effects that are most likely to occur from repeated exposure over a long period of time. EST'D PEUTLY; This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.

HMIS CODES; Hazardous Material Identification System

HMIS CODES; Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective

PRIMARY ROUTE OF ENTRY: The way one or more hazardous ingredients may enter the body and cause a general-ized-systemic or specific organ toxic effect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through breathing of veces.

breathing of vapors.

SKIN; A primary route of exposure through contact with

#### SECTION IV: SPECIAL PROTECTION INFORMATION

Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks. MSHA: Mine Safety and Health Administration NIOSH: National Institute for Occupational Safety and Health.

#### SECTION V: PHYSICAL DATA

EVAPORATION RATE: it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH; A value representing the acidity or alkalmity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline

PERCENT VOLATILE: The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure. SOLUBILITY IN WATER: A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA
HAZARDOUS DECOMPOSITION; Breakdown products exp ed to be produced upon product decomposition or lire. INCOMPATIBILITY; Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION; Indicates the fendency of the product's molecules to combine in a chemical reaction releasing excess pressure and heat.

\$TAB/L/TY: Indicates the susceptibility of the product to

spontaneously and dangerously decompose.

#### SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS; RCRA (Resource Conservation and Re-covery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

#### SECTION X: TRANSPORTATION DATA

#### CWA; Clean Water Act

RQ; Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies. TSCA: Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

#### DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet

(Notice Revised 8/91)

14:47

p. 2 of 9

FROM: VHR Scientific

VWR SCIENTIFIC PRODUCTS 1310 GOSHEN PARKWAY WEST CHESTER, PA 19380 TELEPHONE: (610)431-1700

000000000 ATTN HOWARD MATHESON ASH GROVE CEMENT

13939 N RIVERGATE BLVD PORTLAND OR 97203 05-22-97

DEAR CUSTOMER:

ENCLOSED ARE THE MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR THE PRODUCT(S) THAT YOUR COMPANY RECENTLY PURCHASED FROM VWR SCIENTIFIC PRODUCTS. PLEASE FORWARD THESE MSDS(S) TO YOUR SAFETY OFFICER OR OTHER INDIVIDUAL IN YOUR ORGANIZATION RESPONSIBLE FOR IMPLEMENTING THESE REGULATIONS.

"ALL DATA OR INFORMATION REGARDING THE PARTICULAR PRODUCT YOU HAVE PURCHASED FROM VWR SCIENTIFIC PRODUCTS, WHICH IS PROVIDED IN THE ENCLOSED MATERIAL SAFETY DATA SHEET, IS OFFERED GRATUITOUSLY AND IN GOOD FAITH AS ACCURATE, BUT IS FURNISHED WITHOUT GUARANTY. VWR SCIENTIFIC PRODUCTS MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION IN THE MSDS. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT, YOU SHOULD PERFORM YOUR OWN INVESTIGATION AND INDEPENDENT VERIFICATION. THE CONDITIONS OF THE USE OF THE PRODUCT, AND THE SUITABILITY OF THE PRODUCT FOR YOUR PARTICULAR PURPOSES, ARE BEYOND THE CONTROL OF VWR SCIENTIFIC PRODUCTS. THUS, ALL RISKS OF THE USE OF THE PRODUCT ARE THEREFORE ASSUMED BY YOU. THE USER, EXCEPT AS TO SUCH WARRANTIES AS MAY BE PUBLISHED BY VWR SCIENTIFIC PRODUCTS, WITH RESPECT TO A PARTICULAR PRODUCT. VWR SCIENTIFIC PRODUCTS EXPRESSLY DISCLAIMS ALL WARRANTIES OF EVERY KIND, AND NATURE, INCLUDING WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE USE OR SUIT-ABILITY OF THE PRODUCT. VWR SCIENTIFIC PRODUCTS SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATEVER NATURE, DIRECTLY OR INDIRECTLY, RESULTING FROM USE OF THE PRODUCT, OR FROM THE PUBLICATION OF USE OF OR RELIANCE UPON DATA CONTAINED IN THE ENCLOSED MSDS. NOTHING IN THE MSDS IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS, OR WHICH EXTEND LICENSES UNDER VALID PATENTS. IF YOU RESELL THE PRODUCT, YOU ARE RESPONSIBLE TO PASS ON TO YOUR CUSTOMER THE INFORMATION CONTAINED IN THE MSDS, AND GIVE TO THEM APPROPRIATE WARNINGS AND SAFE HANDLING INSTRUCTIONS AS NECESSARY TO MAKE THE PRODUCT SAFE FOR THE INTENDED USES BY YOUR CUSTOMER.

THANK YOU,

VWR SCIENTIFIC PRODUCTS

10: 5032892272

FROM: VWR Scientific

05-22-97 14:47

05-22-97

p. 3 of 9

PAGE 001

CATALOG NUMBER MSDS FORM-DOC NUMBER

EM-MX0400-2

WX@398

# MATERIAL SAFETY DATA SHEET

#### EM SCIENCE

### CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER....:

PREPARATION DATE.: 04/11/95 DATE MSDS PRINTED.: OCT 19, 1995

EM SCIENCE

A DIVISION OF EM INDUSTRIES

P.O. BOX 70

480 DEMOCRAT RD.

GIBBSTOWN, N.J. 08027

INFORMATION PHONE NUMBER.: 609-423-6300

HOURS: MON. TO FRI. 8:30-5

CHEMTREC EMERGENCY NUMBER: 800-424-9300

HOURS: 24 HRS A DAY

CATALOG NUMBER(S):

MXØ398

MX0400

MX0405

4404

PRODUCT NAME....:

MERCURY

SYNONYMS....:

QUICK SILVER

CHEMICAL FAMILY..: METALLIC ELEMENT

FORMULA....:

HG

MOLECULAR WEIGHT .:

200.59

# COMPOSITION / INFORMATION ON INGREDIENTS

| COMPONENT | CAS # | APPR % |
|-----------|-------|--------|
|           |       |        |
| MEDCHOV   |       |        |

7439-97-6

100%

### 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW VAPOR HAZARDOUS. MAY BE FATAL IF INHALED. CAN CAUSE KIDNEY, HEART, LUNG AND BRAIN DAMAGE. IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES.

APPEARANCE.. SILVERY-GRAY; HEAVY LIQUID

and the second s

MSDS (CONTINUED) - MX0398

#### SYMPTOMS OF EXPOSURE:

HIGHLY TOXIC BY VAPOR INHALATION; SYMPTOMS: METALLIC TASTE, NAUSEA, ABDOMINAL PAIN, DIARRHEA, HEADACHE, ALBUMINUREA. PROLONGED OR REPEATED EXPOSURE MAY CAUSE MUSCLE TREMORS, CENTRAL NERVOUS SYSTEM DISTURBANCES, KIDNEY, HEART, LUNG AND BRAIN DAMAGE.

CAN BE ABSORBED THROUGH SKIN AND GI TRACT.

MEDICAL COND. AGGRAVATED BY EXPOSURE: DATA NOT AVAILABLE.

CARCINOGENICITY......
THE MATERIAL IS NOT LISTED (IARC, NTP, OSHA) AS CANCER CAUSING AGENT.

#### 4. FIRST AID MEASURES

#### EMERGENCY FIRST AID:

GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.

SKIN: WASH THOROUGHLY WITH SOAP AND WATER.

EYES: IMMEDIATELY FLUSH THOROUGHLY WITH WATER FOR AT LEAST 15 MINUTES.

INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED.

INGESTION: IF CONSCIOUS, DRINK WATER AND INDUCE VOMITING IMMEDIATELY AS DIRECTED BY MEDICAL PERSONNEL. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

### 5. FIRE FIGHTING MEASURES

FLASH POINT (F).....: NONCOMBUSTIBLE FLAMMABLE LIMITS LEL (%).: N/A FLAMMABLE LIMITS UEL (%).: N/A EXTINGUISHING MEDIA....:
USE ANY SUITABLE FOR ADJACENT MATERIAL.

FIRE FIGHTING PROCEDURES.: WEAR SELF-CONTAINED BREATHING APPARATUS.

FIRE & EXPLOSION HAZARDS.:
EMITS EXTREMELY TOXIC MERCURY VAPOR AT HIGH TEMPERATURES.

## 6. ACCIDENTAL RELEASE MEASURES

MSDS (CONTINUED) - MXØ398 PAGE # 2

SPILL RESPONSE:

EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL. WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED UNDER EXPOSURE / PERSONAL PROTECTION.

ELIMINATE ANY IGNITION SOURCES UNTIL THE AREA IS DETERMINED TO BE FREE FROM EXPLOSION OR FIRE HAZARDS.

CONTAIN THE RELEASE AND ELIMINATE ITS SOURCE, IF THIS CAN BE DONE WITHOUT RISK.

TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DISPOSAL.

COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING RELEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER REGULATORY DATA.

SXØ866

CHEMIZORB--HG MERCURY SPILL CLEAN UP KIT

#### 7. HANDLING AND STORAGE

HANDLING & STORAGE:

KEEP CONTAINER CLOSED AND AWAY FROM HEAT.

DO NOT BREATHE VAPOR.

DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:

PROTECTION, RESPIRATORY PROTECTION, PROTECTIVE CLOTHING, EYE PROTECTION MATERIAL MUST BE HANDLED OR TRANSFERRED IN AN APPROVED FUME HOOD OR WITH EQUIVALENT VENTILATION.

PROTECTIVE GLOVES (NEOPRENE, PVC OR EQUIVALENT) SHOULD BE WORN TO PREVENT SKIN CONTACT.

SAFETY GLASSES WITH SIDE SHIELDS SHOULD BE WORN AT ALL TIMES.

WORK / HYGENIC PRACTICES:

WASH THOROUGHLY AFTER HANDLING.

DO NOT TAKE INTERNALLY.

EYE WASH AND SAFETY EQUIPMENT SHOULD BE READILY AVAILABLE.

#### **EXPOSURE GUIDELINES**

OSHA - PEL:

TWA STEL CL COMPONENT PPM MG/M3 PPM MG/M3 SKIN

MERCURY

MSDS (CONTINUED) - MXØ398 PAGE # 3

0.05Х ACGIH - TLV: STEL CL TWA MG/M3 COMPONENT PPM MG/M3 MG/M3 TMERCURY 0.025 Х 9. PHYSICAL AND CHEMICAL PROPERTIES BOILING POINT (C 760 MMHG).: 357C MELTING POINT (C)...... -39C SPECIFIC GRAVITY (H20 = 1).: 13.55 VAPOR PRESSURE (MM HG)....: 0.001 20C PERCENT VOLATILE BY VOL (%): 99+% SUBLIMES VAPOR DENSITY (AIR = 1)...: N/A EVAPORATION RATE (BUAC = 1): N/A SOLUBILITY IN WATER (%)...: INSOLUBLE APPEARANCE......: SILVERY-GRAY: HEAVY LIQUID 10. STABILITY AND REACTIVITY

STABILITY..... YES HAZARDOUS POLYMERIZATION: DOES NOT OCCUR \_\_\_ ZARDOUS DECOMPOSITION.: **HG VAPORS** 

CONDITIONS TO AVOID....:

HEAT

MATERIALS TO AVOID....:

( ) WATER ( ) ACIDS

( ) BASES

( ) CORROSIVES

( ) OXIDIZERS (X) OTHER:

ACETYLENIC COMPOUNDS, AMMONIA, ETHYLENE OXIDE

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA:

MSDS (CONTINUED) - MX0398

IHL-MAN TCLO: 44.3 MG/M3/8H IHL-RBT LCLO: 29 MG/M3/30H

'TOXICOLOGICAL FINDINGS:
TESTS ON LABORATORY ANIMALS INDICATE MATERIAL MAY CAUSE TUMORS
AND PRODUCE ADVERSE MUTAGENIC AND REPRODUCTIVE EFFECTS.
CITED IN REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS)

| 12       | DISPOSAL | CONSIDERATIONS  |
|----------|----------|-----------------|
| <u> </u> | DIO OOIL | COMOTOCIMII TOM |

EPA WASTE NUMBERS: U151 D009

TREATMENT:

SPECIFIED TECHNOLOGY - CONTACT YOUR LOCAL PERMITTED WASTE DISPOSAL SITE (TSD) FOR PERMISSIBLE TREATMENT SITES. ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

#### 13. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME...:

### 14. REGULATORY INFORMATION

TSCA STATEMENT .....:
THE CAS NUMBER OF THIS PRODUCT IS LISTED ON THE TSCA INVENTORY.

| COMPONENT | SARA<br>EHS<br>(302) | SARA<br>EHS TPQ<br>(LBS) | CERCLA<br>RQ<br>(LBS)            |
|-----------|----------------------|--------------------------|----------------------------------|
| MERCURY   |                      |                          | 1                                |
| COMPONENT | OSHA<br>FLOOR LIST   | SARA<br>313              | DEMINIMIS<br>FOR SARA 313<br>(%) |
| MERCURY   | Υ                    | . ү                      | 1.0                              |

# | 15. OTHER INFORMATION

Supplied to the supplied of th

MSDS (CONTINUED) - MX0398

14:49

p. 9 of 9

10: 5032892272

COMMENTS:

MÉRCURY AND MERCURY COMPOUNDS ARE LISTED AS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

NFPA HAZARD RATINGS:

HEALTH : 3
FLAMMABILITY : 0
REACTIVITY : 0
SPECIAL HAZARDS :

REVISION HISTORY:

12/01/81 09/12/86 10/27/87 03/01/91 08/29/91 05/14/92 07/06/93 12/21/94

| = REVISED SECTION N/A = NOT AVAILABLE N/E = NONE ESTABLISHED

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT EM SCIENCE BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILL AND AT THEIR OWN DESCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS OR OTHERWISE.

PORTIONS COPYRIGHT ARIEL RESEARCH CORPORATION, 1993. RESTRICTED USE CONDITIONS APPLY. SELECTED REGULATORY INFORMATION IN EMCIS HAS BEEN DERIVED FROM ARIEL RESEARCH CORP'S. INTERNATIONAL CHEMICAL REGULATORY MONITORING SYSTEM (ICRMS). USE OF THIS DATA IS SUBJECT TO THE TERMS OF A LICENSE AGREEMENT BETWEEN EMINDUSTRIES AND ARIEL RESEARCH CORP. FURTHER DISTRIBUTION WITHOUT AUTHORIZATION IS PROHIBITED.

MSDS - MX0398



# MATERIAL SAFETY DATA SHEET

#### PRODUCT NAME AND COMPANY IDENTIFICATION.

MANUFACTURER:

garagnani**he**wi

Lo-Erode, Lo- Erode CV,

National Refractories & Minerals Corporation

PRODUCT(S):

Lo-Erode GM, Megolite 3-GM

1852 Rutan Drive

Livermore, California 94550-7635 DATE:

June 30, 1997

TELEPHONE No.:

MSDS No.:

0019

EMERGENCY:

(510) 449-5010

INFORMATION:

(510) 294-7544

REVISION No.:

PREPARED BY:

LABEL No.:

3072

Corporate Environmental Services

|                                                                                    | SCOMPOSITIO       | N AND INFORMATION                      | ON INCREDITATE                     |                        |
|------------------------------------------------------------------------------------|-------------------|----------------------------------------|------------------------------------|------------------------|
| Ingredient                                                                         | Weight %          | CAS Number                             | '96 ACGM TLV                       | <u>OSHA PEL</u>        |
| Silica, crystalline cristobalite<br>Alumino silicates<br>Cement, calcium aluminate | <15<br>>45<br><40 | 14464-46-1<br>66402-68-4<br>65997-16-2 | 0.05 mg/m <sup>3</sup><br>NE<br>NE | 0,05 mg/m³<br>NE<br>NE |

At very high temperatures such as during refractory use, other/additional forms of silica (such as quartz, cristobalite, triclymite, amorphous) may be formed, triggering other applicable exposure guidelines. In addition, refractory may become contaminated with other hazardous substances (e.g., metals, alkaline materials). The specific processing and use of this refractory should be fully evaluated to assess the entire scope of health hazards.

1) TLV and PEL values given above are 8-hour, time-weighted averages, unless otherwise specified. Note:

2) NE = None Established, and means that the substance is not assigned a specific TLV or PEL. Substance regulated by OSHA as particulates not otherwise regulated (PNOR, PELs - 15 mg/m³ total dust, 5 mg/m³ respiratory fraction) and by ACGIH as particulates not otherwise classified (PNOC, TLV - 10 mg/m<sup>3</sup> total dust, 3 mg/m<sup>3</sup> respirable fraction) and is considered a unisance dust.

#### SALE HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Granular mix, practically odorless. As-manufactured product does not pose significant fire hazard. Refractory particulates formed during processing, installation, maintenance procedures and/or tear-out may be irritating to the skin, eyes and respiratory tract, and may cause pulmonary system effects. Potential for cancer and silicosis exists for long-term exposures to product particulates. Product is noncombustible and stable.

PRIMARY ROUTES OF ENTRY:

Inhalation: Yes.

Skin: Yes.

Ingestion: No.

Other: No.

EYE CONTACT:

Particulates may cause slight to moderate irritation. Abrasive action of dust can damage eyes. Cement dust and/or wet, unhardened product can cause alkali burns.

SKIN CONTACT:

May cause irritation. Coment dust and/or wet, unhardened product can dry the skin and cause alkali

burns.

INHALATION:

Inhalation of airborne particulates may cause slight to moderate irritation of mucous membranes.

Inhalation of cement dust can irritate the respiratory tract and cause alkali burns.

0019 Page 1 of 6

Ingestion is unlikely. If ingested in sufficient quantities, may cause gastrointestinal disturbances. INGESTION: Symptoms may include irritation, nausea, vomiting, abdominal pain and diarrhea.

The prolonged inhalation of dusts containing crystalline silics may result in the development of disabling pulmonary fibrosis known as silicosis. Silicosis is a chronic disease characterized by generalized fibrotic changes and the development of nodules in both lungs, and clinically by shortness of breath, decreased chest expansion, lessened capacity for work, absence of fever, increased susceptibility to tuberculosis, and characteristic x-ray findings.

IARC has listed crystalline silica from occupational sources as a Group 1 carcinogen. A CARCINOGENICITY: Group 1 carcinogen is one in which there is sufficient evidence for carcinogenicity in humans. NTP has listed crystalline silica as reasonably anticipated to be a carcinogen.

SIGNS AND SYMPTOMS OF OVEREXPOSURE: Imitation, shortness of breath, decreased chest expansion, dry cough, farigue, dyspnea, cyanosis, loss of appetite, chest pain, total incapacity to work.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE (to particulates): Preexisting diseases or other conditions of the lungs, skin, eyes, and other muccus membranes. Exposure to product dust in conjunction with exposure to other potential carrinogens (such as cigarette smoking) may have a synergistic effect.

#### THE PRINCIPAL PRINCIPLES

INHALATION:

Immediately remove victim from the adverse environment to fresh air and seek medical attention.

**EYE CONTACT:** 

Immediately flush with large amounts of running water as needed. If symptoms persist, seek

medical attention

SKIN CONTACT: If thust gets on skin, wash contaminated area with soap and water. Remove and wash contaminated clothing. If rash, irritation, or other symptoms persist, seek medical attention.

INGESTION: Ingestion is an unlikely route of exposure. If particles are ingested and victim is conscious, give 1-2 glasses of water or milk. Never give anything by mouth to an unconscious person. Leave decision to induce vomiting for a doctor, since particles may be aspirated into the lungs. Seek immediate medical attention.

### 5 FIRE FIGHTING MEASURES

FLASH POINT:

Not applicable.

FLASH POINT METHOD USED:

Not applicable.

FLAMMABLE LIMITS:

Not applicable.

LEL: Not applicable.

UEL: Not applicable.

**AUTOIGNITION:** 

Not applicable.

**GENERAL HAZARD:** 

This refractory product is noncombustible and does not pose fire or explosion hazards, and will not ignite or contribute to the intensity of a fire.

As appropriate for surrounding fire. **EXTINGUISHING MEDIA:** 

FIRE FIGHTING INSTRUCTIONS: As appropriate for surrounding fire.

As appropriate for surrounding fire. Generally, fire fighters should wear full turn-FIRE FIGHTING EQUIPMENT: out (bunker) gear and full respiratory protection (self-contained breathing apparatus-SCBA). Wear SCBA with full facepiece, operated in the positive pressure mode when fighting fires,

**HAZARDOUS COMBUSTION PRODUCTS:** Not applicable.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Product requires the addition of water during installation. This water is driven out by heat during initial heat-up. Too fast a heating rate may cause the development of excess steam pressure which could then result in a rupture or explosion.

0019 Page 2 of 6

# ACCIDING AL-RUMBAST MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: If there is a spill of product, installation, maintenance, or tear-out material, the following precautions should be taken: Clean up using methods which avoid dust generation. If a vacuum is used, exhaust air should be filtered by a high-efficiency particulate air (HEPA) filter. Compressed air should not be used to clean up spills. During cleanup, skin and eye contact and inhalation of dust should be avoided. Provide local exhaust or dilution ventilation as required. When necessary, wear appropriate personal protective equipment (see Section 3) during clean-up operations. Collect material in a compatible and appropriately labeled container. For small dry spills, place material into clean dry container with a clean shovel, and cover. Comply with federal, state, and local regulations regarding reporting of spills. Dispose of material from processing, installation, maintenance, or tear-out operations in accordance with applicable federal, state, and local regulations (see Section 13).

#### 255 HANDLING AND STORAGES

STORAGE TEMPERATURE AND PRESSURE:

THE STATES TO SELECT THE SECOND SECON

Not applicable.

Store in a dry area. Minimize dust generation PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: and avoid inhalation and contact with dusts during processing, installation, maintenance, and/or tear-out. After handling of dusts from processing, installation, maintenance, and/or tear-out, wash exposed sion areas thoroughly. Wash clothing contaminated with dusts.

#### EXPOSURE CONTROL AND PERSONAL PROTECTION

Dusts generated during maintenance and tear-out operations may be contaminated with other hazardous substances (e.g., metals, alkali materials). Evaluation of specific processes should be performed by a qualified health and safety professional to determine appropriate controls and personal protective equipment to minimize exposure and contact.

RESPIRATORY PROTECTION: Use an appropriate NIOSH/MSHA-approved respirator if airborne contaminant concentrations exceed applicable OSHA PEL or ACGIH TLV limits (see Section 2 for PELs and TLVs) or other industry standards or guidelines on exposure. If respiratory protection is required, all appropriate requirements as set forth in 29 CFR 1910, 134 must be met. A qualified health and safety professional should be consulted for respirator selection.

PROTECTIVE GLOVES:

Use as needed to prevent skin contact.

EYE PROTECTION:

Use safety glasses and/or dust-proof safety goggles to prevent contact with dust.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Clothing which minimizes skin exposure.

**ENGINEERING CONTROLS!** 

Use local and/or general dilution ventilation, as needed, to reduce employee exposures to below applicable OSHA PELs and ACGIH TLVs (see Section 2 for PELs and TLVs).

WORK/HYGIENE PRACTICES:

Use good personal hygiene when handling this product. Wash hands after use,

before smoking, or before using the toilet.

# 9 PHYSICAL AND CHEMICAL PROPERTIES

**BOILING POINT:** 

Not applicable.

APPEARANCE:

Granular.

MELTING POINT:

>2000°F

ODOR:

None.

FREEZING POINT:

Not applicable.

Hg:

Wet, unhardened product may exceed 11.

VAPOR PRESSURE :

Not applicable.

SPECIFIC GRAVITY:

2.0 - 3.0

VAPOR DENSITY:

Not applicable.

SOLUBILITY IN WATER:

<5%

0019 Page 3 of 6

5No.53904 2 P. 3

Not applicable. MOLECULAR WT.:

% VOLATILES: Not applicable. POUNDS PER GALLON :

Not applicable.

**EVAPORATION RATE:** 

Not applicable.

STABILITY:

Stable.

CONDITIONS TO AVOID:

Not applicable.

**BAZARDOUS POLYMERIZATION:** 

Will not occur.

CONDITIONS TO AVOID:

Not applicable.

INCOMPATIBILITY:

Strong acids and strong alkalis. Strong acids may react violently with dry or wet,

unhardened product.

**HAZARDOUS DECOMPOSITION:** Not applicable.

### THE TOXICOLOGICAL REDRMATION

The toxic dose threshold (TD<sub>La)</sub> for the rat was reported as 90 mg/kg, by the intrapleural route. For alumino-silicates: Tumorigenic effects on the respiratory system were noted.

For crystalline silica: The human lethal airborne concentration threshold (LCL) was reported as 400 particles per cubic centimeter with intermittent exposure over 4 years. Fibrosis of the lungs was noted as the toxic effect."

In another study, the human lethal airborne concentration threshold was reported as 16 mppcf with intermittent 8-hour exposures over 17.9 years. Toxic effects noted were fibrosis, cough, and dyspnea.

The toxic dose threshold (TD<sub>10</sub>) for the rat was reported as 90 mg/kg, by the intrapleural route. Tumorigenic effects noted were lymphoma including Hodgkin's disease.

When administered as a single intrapleural injection, cristobalite or tridymite, with particles in the respirable range, induced malignant lymphomas in rats of both sexes.

#### 12 ECOLOGICAL INFORMATION

Dusts of as-manufactured refractory product have a low order of aquatic texicity (rating TLm96: over 1000 ppm), are insoluble, and are not very mobile. Based upon this information, it is not believed to be a significant threat to the environment if accidentally released on land or into water. However, dust and material generated during maintenance and tear-out operations may be contaminated with other bazardous substances (e.g., metals, alkaline materials). Evaluation of dust and material from specific processes should be performed by a qualified environmental professional to determine if an environmental threat exists in the case of a release.

#### 13 DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: The as-manufactured refractory or refractory dust is not considered a hazardous waste as defined by 40 CFR 261. However, dust and material generated during maintenance and tear-out operations may be contaminated with other hazardous substances (e.g., metals, alkali materials). Therefore, appropriate waste analysis may be necessary to determine proper disposal. Waste characterization and disposal/treatment methods should be determined by a qualified environmental professional in accordance with applicable federal, state, and local regulations.

### 14: TRANSPORTATION INFORMATION

DOT Proper Shipping Name (49 CFR 172.101):

Not applicable.

DOT Hazard Class (49 CFR 172.101): UN/NA Code (49 CFR 172.101):

Not applicable. Not applicable.

0019 Page 4 of 6

DOT Labels Required (49 CFR 172.101): DOT Placards Required (49 CFR 172.504):

Not applicable. Not applicable.

CAA Title VI: This product does not contain nor was it manufactured using ozone-depleting chemicals. TSCA Status: All components used in this product are on the Toxic Substances Control Act Inventory.

CERCLA Hazardous Substances: None.

SARA Title III:

Section 302 Extremely Hazardous Substances:

None.

Section 311/312 Hazardous Categories:

Immediate (Acute).

Section 313 Toxic Chemicals:

None.

RCRA Status: Not regulated.

California Proposition 65:

The California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) requires that the Governor of California publish a list of chemicals known to the State to cause cancer or reproductive harm.

Silica is on the Governor's Proposition 65 list.

Components used in this product may contain minor trace amounts of inherent naturally occurring elements (such as, but not limited to, arsenic, cadmium) that are on the Governor's Proposition 65 list.

#### INTERNATIONAL:

IARC:

IARC has listed respirable crystalline silica from occupational sources as a Group 1 carcinogen, CANADA (WHMIS): All components used in this product are listed on the Domestic Substances List (DSL)

EUROPEAN COMMUNITY:

All components used in this product are listed on ECOIN, the European Core Inventory.

AUSTRALIA: All components used in this product are listed on the AICS inventory.

JAPAN:

Silicon is listed on MITL the Ministry of International Trade Industry.

# THE THER INFORMATION

**DESCRIPTION:** This product is a granular refractory mix. Metal fibers and/or organic fibers are occasionally added to this product to enhance service conditions. These fibers are essentially nontoxic.

NFPA RATING:

FLAMMABILITY: 0

TOXICITY:

REACTIVITY:

HMIS RATING:

FLAMMABILITY: 0

HEALTH!

REACTIVITY:

All information appearing here is based on data believed to be reliable. However, THE INFORMATION AND THE PRODUCT ARE PROVIDED WITHOUT ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO REPRESENTATIONS AND WARRANTIES REGARDING ACCURACY OR CORRECTNESS, THE EFFECTS OF using the product, the results to be obtained, fitness for a particular purpose, or the safety OR TOXICITY OF THE PRODUCT. It is the users' responsibility to determine the safety, toxicity, and suitability for their use of the product and to comply with all applicable statutes and regulations. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control. For this and other reasons, National Refractories & Minerals Corporation does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of, relating to, or in any way connected with the handling, storage, use, or disposal of this product. This MSDS is not intended as a license to operate under, or a recommendation to infringe on, any patents. Appropriate warnings and safe handling instructions should be provided to handlers and users.

Lewis, R. J., Hawley's Condensed Chemical Dictionary, Twelfth Edition, Van Nostrand Reinhold Co., Inc., NY. Material Safety Data Sheets-Preparation, ANSI Z400.1-1993, American National Standards Institute, NY. Tureshold Limit Values and Biological Exposure Indices for Chemical Substances and Physical Agents, ACGIH, OH. Sax. N. L. Dangerous Properties of Industrial Materials, Ninth Edition, Van Nostrand Reinhold Co., Inc., NY. Manufacturers/Suppliers Material Safety Data Sheets on raw materials used.

0019 Page 5 of 6

| LEGENO           | American Conference of Governmental Industrial Hygienists                                            |
|------------------|------------------------------------------------------------------------------------------------------|
| ACCIH<br>AICS    | American Councies of Covernmental Industrial Projection  Australian Inventory of Chemical Substances |
| CAS              | Chemical Abstract Services                                                                           |
| CERCLA           | Comprehensive Environmental Response, Compensation, and Liability Act                                |
| CFR              | Code of Federal Regulations                                                                          |
| DOT              | Department of Transportation                                                                         |
| DSL              | Domestic Substances List (Canada)                                                                    |
| ECOIN            | European Core Inventory                                                                              |
| EPA              | Environmental Protection Agency                                                                      |
| IARC             | International Agency for Research on Cancer                                                          |
| LC <sub>m</sub>  | Lethal concentration (50% kill)                                                                      |
| LCL              | Lowest published lethal concentration                                                                |
| LD <sub>2</sub>  | Lethal close (50% kill)                                                                              |
| LDL              | Lowest published lethal dose                                                                         |
| MSHA             | Mine Safety and Health Administration                                                                |
| NÉ               | None established                                                                                     |
| NFPA             | National Fire Protection Association                                                                 |
| NIOSH            | National Institute for Occupational Safety and Health                                                |
| NTP              | National Tocicology Program                                                                          |
| OSHA             | Occupational Safety and Health Administration                                                        |
| PEL              | Permissible Exposure Limit                                                                           |
| PIN              | Product Identification Number                                                                        |
| RCRA -           | Resource Conservation and Recovery Act                                                               |
| SARA             | Superfund Amendments and Reauthorization Act                                                         |
| STEL             | Short Term Exposure Limit                                                                            |
| TCLP             | Toxic Chemicals Leachate Program                                                                     |
| TDG              | Transportation of Dangerous Goods                                                                    |
| TD <sub>to</sub> | Lowest published toxic dose                                                                          |
| ILV              | Threshold Limit Value                                                                                |
| TSCA             | Textic Substances Control Act                                                                        |
| TWA              | Time Weighted Average                                                                                |
| WHMIS            | Workplace Hezardous Material Information System (Canada)                                             |

atm atmosphere
cm centimeter
gm gram
in inch
kg kilogram
lb pound
m' cubic meter
mg milligram
ml milliliter
mm millimater
n.o.s. not otherwise specified
pph part per billion
ppm part per million
mppef millions of particles
per cubic foot

m micron
mg microgram

# MATERIAL SAFETY DATA SHEET

Date: 08/01/97

Nos. 3297 3904, 3102

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

#### **SECTION 1**

**PRODUCT NAME:** 

INSWOOL BLANKET
INSWOOL -HP BLANKET
INSWOOL -HP-M BLANKET\*
INSWOOL -HT BLANKET\*
INSWOOL -HT-M BLANKET\*
INSWOOL -LT-M BLANKET\*
INSWOOL -M BLANKET\*
INSWOOL MODULE BE-104

INSWOOL BULK
INSWOOL -HP BULK
INSWOOL -HP-M BULK\*
INSWOOL -HT BULK
INSWOOL -HT-M BULK\*
INSWOOL -LT BULK
INSWOOL -LT-M BULK\*
INSWOOL -M BULK

PRODUCT TYPE:

Refractory Ceramic Fiber Blanket or Bulk

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY:

Not Applicable

FORMULA: Not Applicable

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL

TLV-TWA

CAS#

Refractory Ceramic Fiber (Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>) (100%)

1 fiber/cc\*

142844-00-6

\*A. P. Green workplace exposure guideline. See also Section III.

# SECTION III HAZARDS INFORMATION

American Conference of Governmental Industrial Hygienists (ACGIH) is proposing a TLV-TWA of 0.1 to 0.5 fibers/cc for Refractory Ceramic Fiber.

International Agency for Research on Cancer (IARC) has classified Refractory Ceramic Fiber as 2B — possibly carcinogenic to humans.

As supplied, product contains no crystalline silica; however, when exposed to temperatures above 1800°F (982°C) during service, cristobalite, a form of crystalline silica, may form. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

<sup>\*</sup>Manufactured in the Republic of Mexico.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

Contact between refractory ceramic fibers and skin may result in transitory skin rash. Susceptibility varies with individuals, with some individuals showing no susceptibility.

### SECTION IV FIRST AID MEASURES

#### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Causes mechanical irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

May cause skin irritation.

CHRONIC:

None Known

INHALATION: ACUTE:

CHRONIC:

Dust generated can cause breathing discomfort.

Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

### SECTION V FIRE FIGHTING MEASURES

**FLAMMABLE PROPERTIES:** 

Non-Flammable

**EXTINGUISHING MEDIA:** 

Not applicable for product.

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS: None** 

### SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: Dampen, then pick up or scoop up and place in a container for disposal.

### SECTION VII **HANDLING AND STORAGE**

Store in a dry place, away from extreme heat. Product is non-flammable, but packaging is combustible.

#### **SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Use adequate ventilation to meet exposure controls (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator for mineral dusts when working with

this product.

**EYE PROTECTION:** Use safety glasses with side shields to avoid eye contact.

**SKIN PROTECTION:** Wear impervious gloves and long-sleeved clothing to avoid skin contact.

Cleanse exposed skin after any contact.

OTHER: Wash work clothing separately; rinse washing machine thoroughly after

use.

#### **SECTION IX** PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: White to Off-White Fiber, in Blanket or Bulk Form **BOILING POINT:** pH:

Not Applicable None SOLUBILITY IN WATER: None ODOR:

SPECIFIC GRAVITY: Not Applicable **MELTING POINT:** Not Applicable

### SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

# SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

#### SECTION XII **ECOLOGICAL INFORMATION**

Ecotoxicological/chemical fate information: not available.

#### SECTION XIII **DISPOSAL CONSIDERATIONS**

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

#### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

### SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 07/14/95

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\IWB.087



ZEP MANUFACTURING COMPANY P.O. BOX 2015 ATLANTA, GEORGIA 30301

ASHGROVE CEMENT WEST INC (366) 13939 N RIVERGATE BLVD PORTLAND, OR 97203
RECEIVED

AUG 0 8 1997

# MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

08/01/97

**ISSUE DATE: 05/21/92 SUPERSEDES: 01/14/92** 

zep blast away PRODUCT NO: 0379

Streets Cineming Compared - Liquid

SECTION I - EMERGENCY CONTACTS

TELEPHONE (404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST)

MEDICAL EMERGENCY:

770) 439-4200 (770) 439-4200 (770) 432-2873 (770) 424-4789 (770) 392-1480 (770) 455-8160 (770) 552-8836

NON-OFFICE HOURS, WEEKENDS AND HOLIDAYS, PLEASE CALL YOUR LOCAL POISON CONTROL

TRANSPORTATION EMERGENCY:

(770) 922-0923 CHEMTREC:

1-800-424-9300 DISTRICT OF COLUMBIA: (202) 483-7616

**TOLL-FREE - ALL CALLS RECORDED** 

**ALL CALLS RECORDED** 

 $\mathbf{BY}$ : SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS \*\*NONYLPHENOXYPOLY(ETHYLENEOXY)ETHANOL \*\* npe; poly(oxy-1,2-ethanediyl), alpha-(nonylphenyl)-omega-hydroxy; CAS # 9016-45-9; RTECS # MD0905000; OSHA PELN/D

\*\*TETRASODIUM ETHYLENEDIAMINE TETRAACETATE \*\* ethylenedinitrilo tetraacetic acid, tetrasodium salt; EDTA;

CAS# 64-02-8; RTECS# AH5075000; OSHA PEL N/D

(PPM) N/D N/D

TLV

**EFFECTS** (SEE REVERSE) FIR

IRR

% IN PRAN <5 5-10

SECTION III - HEALTH HAZARD DATA Special Note: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

Acute Effects of Overexposure:

This product may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Chronic Effects of Overexposure:

Repeated or prolonged skin contact may produce chronic inflammation or dermatitis, characterized by redness, scaling, or itching. Repeated eye exposure may produce chronic inflammation of the eye or corneal damage. None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.

'd PEL/TLV: Not established

Primary Routes of Entry: N/A AIS Codes: HEALTH 1; FLAM. 0; REACT. 0; PERS. PROTECT. B; CHRONIC HAZ. NO

FIRST AID PROCEDURES:

Skin:

Eves:

Flush contaminated skin with plenty of water. Consult a physician if irritation develops.

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and lower lids. Get medical attention at once.

Move exposed person to fresh air. If irritation persists, get medical attention promptly.

Ingest: If this product is swallowed, do not induce vomiting. If victim is conscious give plenty of water to drink. Get medical attention at once

SECTION IV - SPECIAL PROTECTION INFORMATION

**Protective Clothing:** Eye Protection:

Wear neoprene, nitrile, or natural rubber gloves or gloves with proven resistance to the ingredients listed. Wear tight-fitting splash-proof safety glasses especially if contact lenses are worn.

Respiratory Protection: Ventilation:

No special measures are required. No special measures are required.

SECTION V - PHYSICAL DATA

Boiling Point (°F): 219
Percent Volatile by Volume (%): 88 215 Specific Gravity:

Vapor Pressure (mmHg): Evaporation Rate (WATER = 1): N/D 1.0 11.3

Solubility in Water:

COMPLETE

Vapor Density (air = 1): N/D pH (concentrate):

pH (use dilution of 1%): 13.0 Appearance and Odor: CLEAR, RED LIQUID WITH MILD DETERGENT ODOR.

SECTION VI - FIRE AND EXPLOSION DATA

1.06

Flash Point (\*F) (method used): N/A ( )
Flammable Limits: LEL N/A UEL N/A

Noncombustible.

Extinguishing Media: Special Fire Fighting: Unusual Fire Hazards:

Wear self-contained positive pres, breathing apparatus.

#### SECTION VII - REACTIVITY DATA

Stability:

Incompatibility (avoid): Polymerization: Hazardous Decomposition: Stable

Strong oxidizing agents.

Will not occur.

Carbon dioxide, carbon monoxide, & oxides of nitrogen

#### SECTION VIII - SPILL AND DISPOSAL PROCEDURES

Steps to be Taken in Case Material is Released or Spilled:

Observe safety precautions in sections 4 & 9 during clean-up. Absorb spill on an inert absorbent material (e.g. Zep-O-Zorb); pick up and place in a clean D.O. specification container for disposal. Wash area thoroughly with a detergent solution and then rinse well with water. Waste Disposal Method:

Liquids cannot be sent to landfills unless solidified. Unusable product and some collected, spent use-dilutions may require disposal as a hazardous waste at a permitted treatment/storage/disposal facility. In most states hazardous wastes in total amounts of 220 lbs. Or less per month may be disposed of in a chemical or industrial waste landfill. If company effluent is ultimately treated by a publicly owned treatment works, neutralization of spent tank-solutions with subsequent discharge to the sewer may be possible. Consult local, state and federal agencies for proper disposal method in your area.

RCRA Hazardoùs Waste Numbers: D002

#### SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken When Handling and Storing:

Store tightfy closed container in a dry area at temps, between 40-120 degrees F. Keep product away from skin and eyes. Do not breathe spray mists or vapors. Clothing or shoes which become contaminated with substance should be removed promptly and not reworn until thoroughly cleaned. Keep out of the reach of children.

#### SECTION X - TRANSPORTATION DATA

DOT Label/Placard: NONE

DOT PROPER SHIPPING NAME Small sizes one gallon or less may be shipped as ORM-D: NONE

DOT Hazard Class: N/A DOT I.D. Number: N/A

EPA TSCA Chemical Inventory: ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR Part 117 substance (RQ in a single container) : NONE

NOTICE

Thank you for your interest in, and use of, Zep products. Zep Manufacturing Co. is pleased to be of service to you by Zep Manutacturing Co is cleased to he of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safety with proper protective equipment and proper handling practices consistent with label instructions and the MSOS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

Data Sneet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT presurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an appropriate solvent. Empty containers the property of th must be sent to a drum reconditioner before reuse.

# TERMS AND ABBREVIATIONS USED IN THE MSDS: BY SECTION ALPHABETICALLY:

SECTION II: HAZARDOUS INGREDIENTS

CAR: Carcinogen · A chemical listed by the National Toxicology Program (NTP), the International Agency for Research ogy Program (NFF), the international Agency for research on Cancer (IARC) or OSHA as a definite or possible human cancer causing agent.

CAS #; Chemical Abstract Services Registry Number - A

universally accepted numbering system for chemical substances.

CBL: Combustible - At temperatures between 100°F and 200°F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

CNS: Central Nervous System depressant reduces the activity of the brain and spinal cord.

COR: Corrosive - Causes irreversible alterations in living tissue (e.g. burns).
DESIGNATIONS: Chemical and common names of hazardous

DESTRUMENTUMS; Chemical and common names of hazardous ingredients.

E(R): Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EEXPOSURE LIMITS: The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLV's, and OSHA PEL's (TWA, STEL and ceiling limits)

ACGIH: American Conference of Governmental Industrial Hyaienists.

CEIUNG: The concentration that should not be exceeded

CELLING; The concentration that should not be exceeded in the workplace during any part of the working exposure. OSHA; Occupational Safety and Health Administration PEL; Permissible Exposure Limit- A set of time weighted average exposure values, established by OSHA, for a normal 8-tiour day and a 40-hour work week. PPM; Parts per million - unit of measure for exposure

(S) SKIN; Skin contact with substance can contribute to

STEL: Short Term Exposure Limit- Maximum concentration

for a continuous 15-minute exposure period.

TVV Threshold Limit Value - A set of time weighted over age exposure limits, established by the ACGIH, for a

age exposure timits, established by the Accin, for a normal 8-hour day and a 40-hour work week.

FBL: Flammable - At temperatures under 100°F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.

HAZARDOUS (NGREDIENTS: Chemical substances deter-

mined to be potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard • 29 CFR 1910.1200

HTX; Highly toxic - the probable lethal dose for 70 kg (150 (b.) man and may be approximated as less than 6 teaspoons (2 tablespoons).
IRR; Irritant - Causes reversible effects in living tissues (e.g.

inflammation) - primarily skin and eyes.

N/A: Not Applicable - Category is not appropriate for this

product.  $N/D_i$  Not Determined - Insufficient Information for a deter-

mination for this item.

RTECS#; Registry of Toxic Effects of Chemical Substances
- an unreviewed listing of published toxicology data on chemical substances. SARA; Superfund Amendments and Reauthorization Act

Section 313 designates chemicals for possible reporting for the Toxics Release Inventory.

SEN: Sensitizer - Causes allergic reaction after repeated

TOX; Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

#### SECTION III: HEALTH HAZARD DATA

SECTION III: HEALTH HAZARD DATA
ACUTE EFFECT; An adverse effect on the human body from
a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.
CHRONIC EFFECT; Adverse effects that are most likely to
occur from repeated exposure over a long period of time.
EST'D PEUTLY; This estimated, time-weighted average, exposure limit, developed by using a formula provided by the
ACGIH pertains to airborne concentrations from the prodposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers.

HMIS CODES: Hazardous Material Identification System - a rating system developed by the National Paint and Coating

Association for estimating the hazard potential of a chemi-cal under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/Reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.

PRIMARY ROUTE OF ENTRY: The way one or more haz-ardous ingredients may enter the body and cause a general-ized systemic or specific organ toxic effect.

ING: Ingestion - A primary route of exposure through swallowing of material.

INH: Inhalation - A primary route of exposure through

breathing of vapors.

SKIN; A primary route of exposure through contact with

the skin.

#### SECTION IV: SPECIAL PROTECTION INFORMATION.

Where respiratory protection is recommended, use only MSHA and NiOSH approved respirators and dust masks. MSHA: Mine Safety and Health Administration NIOSH; National Institute for Occupational Safety and Health.

SECTION V. PHYSICAL DATA

EVAPORATION RATE; it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water). pH; A value representing the acidity or alkalinity of a aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline

PERCENT VOLATILE; The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure. SOLUBILITY IN WATER; A description of the ability of the product to dissolve in water.

SECTION VII: REACTIVITY DATA

HAZARDOUS DECOMPOSITION; Breakdown products expected to be produced upon product decomposition or fire. INCOMPATIBILITY; Material contact and conditions to avoid to prevent hazardous reactions.

POLYMERIZATION: Indicates the tendency of the product's molecules to combine in a chemical reaction releasing excess pressure and heat.

STABILITY; Indicates the susceptibility of the product to

spontaneously and dangerously decompose.

# SECTION VIII: SPILL AND DISPOSAL PROCEDURES

RCRA WASTE NOS: RCRA (Resource Conservation and Re-covery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container

#### SECTION X: TRANSPORTATION DATA

CWA: Clean Water Act

RQ: Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory anencies. TSCA; Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

#### DISCLAIMER

All statements, technical information and recommendations All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. Zep assumes no liability or responsibility for loss or decrease resulting from the improver use or harding of our damage resulting from the improper use or handling of our products, from incompatible product combinations, or the failure to follow instructions, warnings, and advisorles in the product's label and Material Safety Data Sheet.

(Notice Revised 8/91)

Date: 08/11/97 No. 3901

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

#### **SECTION I**

PRODUCT NAME:

GREENCAST®-45-L

GREENCAST®-45-L Plus

PRODUCT TYPE:

Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

**CHEMICAL FAMILY:** 

 $SiO_2 = 36-42\%$ 

 $Al_2O_3 = 44-50\%$ 

FORMULA: Not Applicable

 $CaO = 9-12\% Fe_2O_3 = 1-2\%$ 

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

| CHEMICAL                                    | TLV-TWA                        | CAS #      |
|---------------------------------------------|--------------------------------|------------|
| Cristobalite (SiO <sub>2</sub> )<br>(5-20%) | 0.05 mg/m³*<br>Respirable Dust | 14464-46-1 |
| Quartz ${SiO_2}$ (<2%)                      | 0.1 mg/m³°<br>Respirable Dust  | 14808-60-7 |
| Fume Silica (SiO <sub>2</sub> )<br>(<5%)    | 2 mg/m³*<br>Respirable Dust    | 69012-64-2 |
| Refractory Cement (25-35%)                  | None (See Section IV)          | 12005-57-1 |

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1996.

# SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

# SECTION IV FIRST\_AID MEASURES

# **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

**INHALATION: ACUTE:** 

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

**INGESTION:** 

ACUTE:

Unknown

CHRONIC:

Unknown

#### FIRST AID MEASURES:

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

# SECTION V **FIRE FIGHTING MEASURES**

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS: None** 

#### **SECTION VI** ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

#### SECTION VII HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

08/11/97

# SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Gray, Granular Mixture

BOILING POINT:

Not Applicable

pH:

9-11

SOLUBILITY IN WATER:

None

ODOR:

None

SPECIFIC GRAVITY:

2.0

MELTING POINT:

Not Applicable

# SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

# SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>so</sub> or LC<sub>so</sub> for oral, dermal, or inhalation routes of administration: no data for product.

# SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

# SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

08/11/97

# SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

# SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 02/20/97

**Note:** This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By:

Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\GC45L.087

# BDH INC.

SAFETY DATA SHEET MATERIAL

SECTION I CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER:

BDH INC. 350 EVANS AVENUE TORONTO, ONTARIO CANADA, M8Z 1K5

INFORMATION PHONE NO.: 416-255-8521 HOURS: MON. TO FRI. (0830 - 1630)

CHEMTREC TRANSPORTATION EMERGENCY CENTER

(CHEMTREC) 24-HOUR...1-800-424-9300

PRODUCT NAME: BUFFER, PH 7.00, YELLOW

CATALOGUE NUMBER(S): 34170-130, 34170-148, 34170-157, 34170-175, B-2055-03, B-2055-04, B-2055-06, B-2055-08, 34170-158, 34170-196

CHEMICAL NAME/OTHER NAME: BUFFER, PH 7.00, YELLOW

CHEMICAL FORMULA: H2O, C12H9O, KH2PO4, NA2HPO4, C16H9N4NA3O9S2

CHEMICAL FAMILY: MIXTURE

### SECTION II COMPOSITION/INFORMATION ON INGREDIENTS

| CHEMICAL NAME                           | CAS NO.                | OSHA PEL          | ACGIH TLV           | % (W/V)      |
|-----------------------------------------|------------------------|-------------------|---------------------|--------------|
| DOUGLOS A                               |                        |                   |                     | 0.05         |
| DOWICIDE A<br>POTASSIUM DIHYDROGEN      | 132-27-4<br>7778-77-0  | _                 |                     | 0.05<br>0.35 |
| PHOSPHATE                               | 7770-77-0              |                   |                     | 0.33         |
| DI-SODIUM HYDROGEN                      | 7558-79-4              | _                 | -                   | 0.58         |
| PHOSPHATE                               | 1024 21 0              |                   |                     | 0 0005       |
| RTRAZINE<br>vvriTER                     | 1934-21-0<br>7732-18-5 | <del>-</del><br>- | , <del>-</del><br>- | 0.0006       |
| *************************************** |                        |                   |                     |              |

SECTION III HAZARDS IDENTIFICATION

APPEARANCE: CLEAR, YELLOW LIQUID

HANDLE IN ACCORDANCE WITH GOOD LABORATORY/

INDUSTRIAL HYGIENE AND SAFETY PRACTICES

\*<del>\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*</del>

POTENTIAL HEALTH EFFECTS (ACUTE & CHRONIC)

(REFER TO LAST PAGE FOR DISCLAIMER)

34170-130 PAGE: 1

SYMPTOMS OF EXPOSURE: NO INFORMATION AVAILABLE

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: NONE IDENTIFIED

ROUTES OF ENTRY: INHALATION, INGESTION

CARCINOGENICITY: DOWICIDE A IS LISTED AS A POSSIBLE CARCINOGEN BY IARC

### SECTION IV FIRST AID MEASURES

EYE: IN CASE OF EYE CONTACT, FLUSH WITH PLENTY OF WATER FOR AT LEAST MINUTES WHILE HOLDING THE EYELIDS OPEN. HAVE EYES EXAMINED BY

MEDICAL PERSONNEL.

SKIN: IN CASE OF SKIN CONTACT, WASH WITH SOAP AND WATER. GET MEDICAL

ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.

INGESTION: IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE VICTIM A GLASS OF

WATER OR MILK. CALL A PHYSICIAN IMMEDIATELY. NEVER GIVE ANYTHING

BY

MOUTH TO AN UNCONSCIOUS PERSON.

INHALATION: IF INHALED, REMOVE TO FRESH AIR.

#### SECTION V FIRE FIGHTING MEASURES

FLAMMABILITY CLASSIFICATION: NONCOMBUSTIBLE

EXTINGUISHING MEDIA: USE ANY SUITABLE FOR ADJACENT MATERIAL

FLASH POINT(F)/METHOD: NOT APPLICABLE

FIRE & EXPLOSION HAZARD: NONE IDENTIFIED

□ER FLAMMABLE LIMIT (%): NOT APPLICABLE

wer flammable Limit (%): Not applicable

AUTOIGNITION TEMPERATURE: NOT APPLICABLE

FIREFIGHTING PROCEDURES: FIREFIGHTERS SHOULD WEAR A SELF CONTAINED BREATHING

APPARATUS.

HAZARDOUS COMBUSTION PRODUCTS: COX

SENSITIVITY TO STATIC DISCHARGE: NO

SENSITIVITY TO MECHANICAL IMPACT: NO

#### SECTION VI ACCIDENTAL RELEASE MEASURES

LEAK OR SPILL CLEANUP: EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL. WEAR SUITABLE PROTECTIVE EQUIPMENT LISTED IN EXPOSURE CONTROLS/PERSONAL PROTECTION. CONTAIN THE RELEASE AND ELIMINATE IT'S SOURCE, IF THIS CAN BE DONE WITHOUT RISK. TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DISPOSAL.COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING RELEASES.

REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER REGULATORY DATA.

(REFER TO LAST PAGE FOR DISCLAIMER)

34170-130 PAGE:

(REFER TO LAST PAGE FOR DISCLAIMER) 34170-130 PAGE:

3

(REFER TO LAST PAGE FOR DISCLAIMER) 34170-130 PAGE: 4

OSHA FLOOR LIST SARA 313 DEMINIMIS (SARA 313)(%)

POTASSIUM DIHYDROGEN PHOSPHATE - DI-SODIUM HYDROGEN PHOSPHATE -

TARTRAZINE

COMPONENT

WATER DOWICIDE A POTASSIUM DI-HYDROGEN PHOSPHATE -- SODIUM HYDROGEN PHOSPHATE -∴RTRAZINE

SECTION XV OTHER INFORMATION

NFPA HAZARD RATINGS (0-4)

HEALTH: 0

FLAMMABILITY: Ø

REACTIVITY:

NFPA SPECIAL WARNINGS: NONE

PREPARATION DATE: AUGUST 24, 1993 REVISION HISTORY: AUGUST 24, 1993; APRIL 5, 1994; MAY 5, 1994; JULY 8, 1994

COMMENTS: NONE

PREPARED BY: TECHNICAL AFFAIRS DEPARTMENT, BDH INC.,

TORONTO, ONTARIO, CANADA

(416) 255-8521

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT BDH INC BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILLS AND AT THEIR OWN DISCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED OF MERCHANTABILITY, FITNESS OR OTHERWISE.

COPYRIGHT BDH, 1997

34170-130 PAGE: 5

"ISSUED BY VWR 09-11-97"

VWR SCIENTIFIC PRODUCTS 1310 GOSHEN PARKWAY WEST CHESTER, PA 19380 TELEPHONE: (610)431-1700

000000000 ATTN HOWARD MATHESON ASH GROVE CEMENT

13939 N RIVERGATE BLVD PORTLAND OR 97203 09-11-97

DEAR CUSTOMER:

ENCLOSED ARE THE MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR THE PRODUCT(S) THAT YOUR COMPANY RECENTLY PURCHASED FROM VWR SCIENTIFIC PRODUCTS. PLEASE FORWARD THESE MSDS(S) TO YOUR SAFETY OFFICER OR OTHER INDIVIDUAL IN YOUR ORGANIZATION RESPONSIBLE FOR IMPLEMENTING THESE REGULATIONS.

"ALL DATA OR INFORMATION REGARDING THE PARTICULAR PRODUCT YOU HAVE PURCHASED FROM VWR SCIENTIFIC PRODUCTS, WHICH IS PROVIDED IN THE ENCLOSED MATERIAL SAFETY DATA SHEET, IS OFFERED GRATUITOUSLY AND IN GOOD FAITH AS ACCURATE, BUT IS FURNISHED WITHOUT GUARANTY, VWR SCIENTIFIC PRODUCTS MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE INFORMATION IN THE MSDS. WHILE THE INFORMATION IS BELIEVED TO BE CORRECT. YOU SHOULD PERFORM YOUR OWN INVESTIGATION AND INDEPENDENT VERIFICATION. THE CONDITIONS OF THE USE OF THE PRODUCT, AND THE SUITABILITY OF THE PRODUCT FOR YOUR PARTICULAR PURPOSES, ARE BEYOND THE CONTROL OF VWR SCIENTIFIC PRODUCTS. THUS, ALL RISKS OF THE USE OF THE PRODUCT ARE THEREFORE ASSUMED BY YOU, THE USER, EXCEPT AS TO SUCH WARRANTIES AS MAY BE PUBLISHED BY VWR SCIENTIFIC PRODUCTS. WITH RESPECT TO A PARTICULAR PRODUCT. VWR SCIENTIFIC PRODUCTS EXPRESSLY DISCLAIMS ALL WARRANTIES OF EVERY KIND, AND NATURE, INCLUDING WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE USE OR SUIT-ABILITY OF THE PRODUCT. VWR SCIENTIFIC PRODUCTS SHALL IN NO EVENT BE RESPONSIBLE FOR ANY DAMAGES OF WHATEVER NATURE, DIRECTLY OR INDIRECTLY, RESULTING FROM USE OF THE PRODUCT, OR FROM THE PUBLICATION OF USE OF OR RELIANCE UPON DATA CONTAINED IN THE ENCLOSED MSDS. NOTHING IN THE MSDS IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS. OR WHICH EXTEND LICENSES UNDER VALID PATENTS. IF YOU RESELL THE PRODUCT, YOU ARE RESPONSIBLE TO PASS ON TO YOUR CUSTOMER THE INFORMATION CONTAINED IN THE MSDS, AND GIVE TO THEM APPROPRIATE WARNINGS AND SAFE HANDLING INSTRUCTIONS AS NECESSARY TO MAKE THE PRODUCT SAFE FOR THE INTENDED USES BY YOUR CUSTOMER.

THANK YOU,

VWR SCIENTIFIC PRODUCTS

TO: 5032892272

FROM: VWR Scientific

09-11-97 14:02

Ø9-11-97

p. 3 of 13

PAGE 001

CATALOG NUMBER

34170-133

MSDS FORM-DOC NUMBER

34170-133

#### BDH INC.

#### MATERIAL SAFETY DATA SHEET

SECTION I CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER:

BDH INC. 350 EVANS AVENUE TORONTO, ONTARIO

CANADA, M8Z 1K5

INFORMATION PHONE NO.: 416-255-8521 HOURS: MON. TO FRI. (0830 - 1630)

CHEMTREC TRANSPORTATION EMERGENCY CENTER

(CHEMTREC) 24-HOUR...1-800-424-9300

PRODUCT NAME: BUFFER PH 10.00. BLUE

CATALOGUE NUMBER(S): 34170-133, 34170-151, 34170-160, 34170-178, B-2105-03, B-2105-04, B-2105-06, B-2105-08, 34170-161, 34170-198 CHEMICAL NAME/OTHER NAME: BUFFER PH 10.00, BLUE

CHEMICAL FORMULA: H20, NA2CO3, C37H35N2O6S2NA, NAHCO3, C6H12N4+(CH2CHCHCL)CL-

CHEMICAL FAMILY: MIXTURE

### SECTION II COMPOSITION/INFORMATION ON INGREDIENTS

| CHEMICAL NAME                                                        | CAS NO.                                        | OSHA PEL         | ACGIH TLV        | % (W/V)            |
|----------------------------------------------------------------------|------------------------------------------------|------------------|------------------|--------------------|
| WATER<br>SODIUM CARBONATE<br>SODIUM BICARBONATE<br>PATENT BLUE A     | 7732-18-5<br>497-19-8<br>144-55-8<br>3486-30-4 | -<br>-<br>-<br>- | -<br>-<br>-<br>- | 0.26<br>0.21<br>0. |
| WICIL 75                                                             | פרה חל זוופרר פוום                             | CIANCEC.         |                  | 0.05               |
| 1-(3-CHLOROALLYL)-3,<br>,7-TRIAZA-1-AZONIA-                          |                                                |                  | -                | %(W/W)<br>0.0365   |
| ADAMANTANE SODIUM BICARBONATE HEXAMETHYLENETETRA- MINE HYDROCHLORIDE | 144-55-8<br>58713-21-6                         | _<br>_<br>       | -<br>-           | 0.0125<br>0.0002   |
|                                                                      |                                                |                  |                  |                    |

SECTION III HAZARDS IDENTIFICATION

APPEARANCE: CLEAR, BLUE LIQUID; ODORLESS

HANDLE IN ACCORDANCE WITH GOOD LABORATORY/

34170-133 PAGE:

(REFER TO LAST PAGE FOR DISCLAIMER)

#### INDUSTRIAL HYGIENE AND SAFETY PRACTICES

POTENTIAL HEALTH EFFECTS (ACUTE & CHRONIC)

SYMPTOMS OF EXPOSURE: NO INFORMATION AVAILABLE

MEDICAL CONDITION AGGRAVATED BY EXPOSURE: NONE IDENTIFIED

ROUTES OF ENTRY: INHALATION, INGESTION

CARCINOGENICITY: NOT LISTED AS A CARCINOGEN

#### SECTION IV FIRST AID MEASURES

EYE: IN CASE OF EYE CONTACT, FLUSH WITH PLENTY OF WATER FOR AT LEAST

MINUTES WHILE HOLDING THE EYELIDS OPEN. HAVE EYES EXAMINED BY

MEDICAL PERSONNEL.

SKIN: IN CASE OF SKIN CONTACT, WASH WITH SOAP AND WATER. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.

INGESTION: IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE VICTIM A GLASS OF WATER OR MILK. CALL A PHYSICIAN IMMEDIATELY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

INHALATION: IF INHALED, REMOVE TO FRESH AIR.

#### SECTION V FIRE FIGHTING MEASURES

FLAMMABILITY CLASSIFICATION: NONCOMBUSTIBLE
EXTINGUISHING MEDIA: USE AN EXTINGUISHER APPROPRIATE TO THE SURROUNDING
MATERIAL THAT IS BURNING.
FLASH POINT(F)/METHOD: NOT APPLICABLE
FIRE & EXPLOSION HAZARD: NONE IDENTIFIED
UPPER FLAMMABLE LIMIT (%): NOT APPLICABLE
LOWER FLAMMABLE LIMIT (%): NOT APPLICABLE
AUTOIGNITION TEMPERATURE: NOT APPLICABLE
FIREFIGHTING PROCEDURES: FIREFIGHTERS SHOULD WEAR A SELF CONTAINED BREATHING
APPARATUS.
HAZARDOUS COMBUSTION PRODUCTS: SOX, NOX, COX
SENSITIVITY TO STATIC DISCHARGE: NO
SENSITIVITY TO MECHANICAL IMPACT: NO

#### SECTION VI ACCIDENTAL RELEASE MEASURES

LEAK OR SPILL CLEANUP: EVACUATE THE AREA OF ALL UNNECESSARY PERSONNEL. WEAR

(REFER TO LAST PAGE FOR DISCLAIMER) 34170-133 PAGE: 2

FROM: VHR Scientific

09-11-97 14:03 p. 6 of 13

SUITABLE PROTECTIVE EQUIPMENT LISTED IN EXPOSURE CONTROLS/PERSONAL PROTECTION. CONTAIN THE RELEASE AND ELIMINATE IT'S SOURCE, IF THIS CAN BE DONE WITHOUT RISK. TAKE UP AND CONTAINERIZE FOR PROPER DISPOSAL AS DESCRIBED UNDER DISPOSAL.COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS ON REPORTING TLEASES. REFER TO REGULATORY INFORMATION FOR REPORTABLE QUANTITY AND OTHER GULATORY DATA.

SECTION VII HANDLING & STORAGE

HANDLING & STORAGE: STORE IN A COOL, DRY, WELL VENTILATED AREA.

SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: ENGINEERING AND/OR ADMINISTRATIVE CONTROLS SHOULD BE IMPLEMENTED TO REDUCE EXPOSURE.

PERSONAL PROTECTIVE EQUIPMENT

GLOVES: NONE SPECIFIED

RESPIRATORY PROTECTION: NONE SPECIFIED

EYE PROTECTION: SAFETY GLASSES CLOTHING: NO SPECIAL REQUIREMENTS

SECTION IX PHYSICAL & CHEMICAL PROPERTIES

YSICAL STATE: LIQUID

--- PEARANCE: CLEAR, BLUE LIQUID

ODOR: ODORLESS

ODOR THRESHOLD: NOT APPLICABLE VAPOR PRESSURE: NOT AVAILABLE VAPOR DENSITY: NOT AVAILABLE SPECIFIC GRAVITY: APPROX. 1 BOILING POINT (F): APPROX. 212 MELTING POINT (F): APPROX. 32 EVAPORATION RATE: NOT AVAILABLE

PH: 10.0

SOLUBILITY IN WATER: SOLUBLE

OCTANOL/WATER PARTITION COEFFICIENT: NOT AVAILABLE

PER CENT VOLATILE BY VOL (%): 100 MOLECULAR WEIGHT: THIS IS A MIXTURE

MULECULAR WEIGHT: THIS IS A MIXTURE

SECTION X STABILITY & REACTIVITY

CHEMICAL STABILITY: NORMALLY STABLE

(REFER TO LAST PAGE FOR DISCLAIMER)

34170-133 PAGE: 3

10: 5032892272

FROM: VAR Scientific

09-11-97 14:03 p. 7 of 13

CONDITIONS TO AVOID: NONE IDENTIFIED

MATERIALS TO AVOID: NONE HAZARDOUS POLYMERIZATION: DOES NOT OCCUR HAZARDOUS DECOMPOSITION PRODUCTS: SOX

### SECTION XI TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE: NO INFORMATION AVAILABLE EFFECTS OF CHRONIC EXPOSURE: NO INFORMATION AVAILABLE

LD50: NOT AVAILABLE LC50: NOT AVAILABLE

IRRITANCY (DRAIZE TEST RESULTS): NO INFORMATION AVAILABLE

CARCINOGENICITY: NOT LISTED AS A CARCINOGEN TERATOGENICITY: NO INFORMATION AVAILABLE MUTAGENICITY: NO INFORMATION AVAILABLE

REPRODUCTIVE EFFECTS: NO INFORMATION AVAILABLE SENSITIZATION TO PRODUCT: NO INFORMATION AVAILABLE

TARGET ORGANS: NONE IDENTIFIED

#### SECTION XII DISPOSAL CONSIDERATIONS

EPA WASTE NUMBER(S): MATERIAL DOES NOT HAVE AN EPA WASTE NUMBER AND IS NOT A LISTED WASTE, HOWEVER CONSULTATION WITH A PERMITTED WASTE DISPOSAL SITE (TSD) SHOULD BE ACCOMPLISHED.

ALWAYS CONTACT A PERMITTED WASTE DIPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS

#### SECTION XIII TRANSPORT INFORMATION

DOT SHIPPING NAME: NOT REGULATED DOT NUMBER (UN): NOT REGULATED PACKING GROUP: NOT REGULATED

HAZARD CLASS: NOT REGULATED

### SECTION XIV REGULATORY INFORMATION

TSCA INVENTORY (YES/NO): YES, THIS MATERIAL IS A MIXTURE. THE CAS NUMBERS OF ALL COMPONENTS ARE LISTED ON THE TSCA INVENTORY.

COMPONENT SARA EHS (302) SARA EHS TPQ (LBS) CERCLA RQ (LBS)

SODIUM CARBONATE

(REFER TO LAST PAGE FOR DISCLAIMER) 34170-133 PAGE: 4

09-11-97 14:04 p. 8 of 13 SODIUM BICARBONATE PATENT BLUE A WATER .\_.MPONENT OSHA FLOOR LIST SARA 313 DEMINIMIS (SARA 313)(%) SODIUM CARBONATE SODIUM BICARBONATE PATENT BLUE A WATER SECTION XV OTHER INFORMATION

FROM: VWR Scientific

NFPA HAZARD RATINGS (0-4)

HEALTH: 0

TO: 5032892272

FLAMMABILITY: 0

REACTIVITY: 0

NFPA SPECIAL WARNINGS: NONE

PREPARATION DATE: AUGUST 24, 1993 REVISION HISTORY: AUGUST 24, 1993; APRIL 5, 1994; MAY 5, 1994;

JUNE 10, 1994; JULY 8, 1994; JULY 22, 1996

COMMENTS: NONE

PREPARED BY: TECHNICAL AFFAIRS DEPARTMENT, BDH INC.,

TORONTO, ONTARIO, CANADA (416) 255-8521

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED UPON TECHNICAL DATA THAT BDH INC BELIEVES TO BE ACCURATE. IT IS INTENDED FOR USE ONLY BY PERSONS HAVING THE NECESSARY TECHNICAL SKILLS AND AT THEIR OWN DISCRETION AND RISK. SINCE CONDITIONS AND MANNER OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTY, EXPRESS OR IMPLIED OF MERCHANTABILITY, FITNESS OR OTHERWISE.

TOPYRIGHT BDH, 1997

34170-133 PAGE:

"ISSUED BY VWR 09-11-97"

34170-130 34170-130

Date: 09/15/97

No. 3912, 4990, 1286 7153, 6915, 3913, 1650, 3915 3916, 3917, 7147, 3918, 3919

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

#### SECTION !

#### **PRODUCT NAME:**

**BRICK MIX 1002** PRAIRIE HIAC' K CB BF CENTURION R-2009 CLIPPER' KX-99 SDS MULTIHOLE CHECKER CLIPPER KX-99 SUPER DUTY (was Grefco Prod) CLIPPER ® KX-99® BF AH SUPER DUTY (Refractory Anchor) MEX-KO YUKON CLIPPER CLIPPER<sub>®</sub> MEX-KO "900" SM CLIPPER" "900"

PRODUCT TYPE:

Super Duty Refractory Bricks or Shapes

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

**CHEMICAL FAMILY:** 

 $SiO_2 = 48-54\%$ 

 $Al_2O_3 = 42-48\%$ 

FORMULA: Not Applicable

 $Fe_2O_3 = 1-2\%$  NaKO = 0.5-1%

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

 CHEMICAL
 TLV-TWA
 CAS #

 Cristobalite\*\* (SiO2) (10-20%)
 0.05 mg/m³\* 14464-46-1

 Respirable Dust
 0.1 mg/m³\* 14808-60-7

 (0-3%)
 Respirable Dust

# SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1996.

<sup>\*\*</sup>Not mechanically separate from each other or other mineralogical phases in product as supplied.

Material Safety Data Sheet Product: BRICK MIX 1002, etc.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### **SECTION IV FIRST AID MEASURES**

#### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust or chips can cause mechanical irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Can cause cuts or abrasions.

CHRONIC:

None Known

**INHALATION:** ACUTE:

Dust, if present, may cause upper respiratory irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

**INGESTION:** 

ACUTE:

Unknown

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

<u>SKIN:</u>

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

### SECTION V FIRE FIGHTING MEASURES

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS: None** 

#### **SECTION VI ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: For broken shapes or fragments, sweep, shovel up, or pick up and place in a

container for disposal.

### SECTION VII HANDLING AND STORAGE

Store in a dry place, away from extreme heat. Product is non-flammable.

# SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around material and

when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

**SKIN PROTECTION:** Impervious gloves and long-sleeved and long-legged clothing should be

worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped bricks or shapes.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

THISIONE AND ONLINIONET HOT ENTILE

APPEARANCE: Off-White to Brown Solid

BOILING POINT: Not Applicable pH: 7

SOLUBILITY IN WATER: None ODOR: None

SPECIFIC GRAVITY: 2.6-2.7 MELTING POINT: Not Applicable

# SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

1

# SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>so</sub> or LC<sub>so</sub> for oral, dermal, or inhalation routes of administration: no data for product.

# SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

Material Safety Data Sheet Product: BRICK MIX 1002, etc.

# SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

# SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 07/28/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\BM1002.097

Complies with OSHA Hazard Communication Standard 29 CFR 1910, 1200

Date of Preparation: 7/1/97 HEALTH - 1 FLAMMABILITY - 1 REACTIVITY - 1 OTHER - NONE

**SECTION 1 - MATERIAL IDENTIFICATION** 

PRODUCT NAME: POLYBAC #500 (white, clear, black, aluminum)

PRODUCT APPEARANCE: Paste like, various colors, Acidic Acid odor.

CHEMICAL NAME: Acetoxysilane EMERGENCY TELEPHONE NUMBERS:

DOT HAZARD CLASSIFICATION: NONE 1-800-535-5053 --- INFOTRAC 1-630-231-5600 --- POLYGEM, INC.

**SECTION 2 - HAZARDOUS INGREDIENTS** 

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENTCAS #PEL/TLV-TWASTEL-TWAAcetoxysilaneT/SN/EN/E

T/S - Trade Secret

Listed above are the hazardous component(s) as defined in 40 CFR 172 and 29 CRF 1010 which are present in this product and all components which appear on the hazardous substance that of any state.

SECTION 3 - PHYSICAL/CHEMICAL CHARACTERISTICS

S - Skin

The following data represents approximate or typical values. They do not constitute product specifications.

BOILING RANGE: >300 F VAPOR DENSITY (AIR=1): NOT VOLATILE WELTING POINT: n/a VAPOR PRESSURE (mm Hg): LESS THAN 5MM

DENSITY: 1.05 EVAPORATION RATE: LESS THAN 1

PERCENT VOLATILE: LESS THAN 5% WATER MISCIBILITY: LESS THAN 0.1%

SECTION 4 - FIRE AND EXPLOSION DATA

FLASH POINT: >250F TEST METHOD: SETAFLASH CLOSED CUP

LOWER FLAMMABILITY LIMIT: N/A UPPER FLAMMABLE LIMIT: N/A

RECOMMENDED EXTINGUISHING MEDIA: FOAM, CARBON DIOXIDE

SPECIAL FIRE FIGHTING PROCEDURES:

N/E - Not Established

FIREFIGHTERS SHOULD WEAR PROTECTIVE GOGGLES AND SELF-CONTAINED BREATHING APPARATUS TO AVOID INHALATION OF SMOKE OR VAPORS. REMOVE ALL IGNITION SOURCES.

UNUSUAL FIRE OR EXPLOSION HAZARDS (CONDITIONS TO AVOID):

MAY PRODUCE HAZARDOUS FUMES OR HAZARDOUS DECOMPOSTION PRODUCTS.

**SECTION 5 - REACTIVITY DATA** 

ABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

INCOMPATABILITY: Strong oxidizers, epoxy resin, and amine mixture especially when hot.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide, Carbon Dioxide and Phenolics.

CONDITIONS TO AVOID: High heat, amines, strong oxidizers, acids and bases.

#### **SECTION 6 - HEALTH HAZARD DATA**

#### EFFECTS OF OVEREXPOSURE:

INHALATION: May cause nasal irritation, central nervous system depression, or lung injury.

EYE CONTACT: Mild or moderate irritation, possible minor temporary comea injury.

SKIN CONTACT: May cause skin irritation on prolonged or repeated exposure.

SKIN ABSORPTION: Not considered toxic.

PERMISSIBLE EXPOSURE LEVEL: none assigned.

CHRONIC EFFECTS OF OVEREXPOSURE: None

#### **EMERGENCY & FIRST AND PROCEDURES:**

EYES: Flush with plenty of water and get medical attention. Keep eye lids apart. Wash within 1 minute of contact for maximum results,

SKIN: Promptly wipe clean with paper or cloths and wash with soap and water. Remove contaminated clothing before reuse.

Attention should be paid to hair, nose and eyes.

INHALATION: in case of exposure to high concentration of vapor or mist, remove person to fresh air.

INGESTION: If large amounts are swallowed, induce vomiting. Seek medical attention. May cause burns to mouth and throat.

PRIMARY ROUTES OF ENTRY: Inhalation, Ingestion, Skin and Eye contact,

CARCINOGENITY: This product does not contain 0.1% or more of any substance which is listed as a carcinogen by NTP, IARC or OSHA.

#### **SECTION 7 - SPILL OR LEAK PROCEDURES**

#### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area. Absorb spill with suitable absorbent material and place into a closed container.

Prevent material from entering waterways. Wear protective equipment during cleanup. Use eye and skin protection

#### WASTE DISPOSAL METHOD:

Incinerate of use biological treatment in accordance with federal, state and local regulations.

For further information, contact: EPA - RCRA HOTLINE (1-800-424-9346),

#### **SECTION 8 - SPECIAL PROTECTION INFORMATION**

#### RESPIRATORY PROTECTION:

Should be worn to avoid breathing spray mist, heated vapors or if TLV is exceeded. Acid vapor type,

#### **VENTILATION:**

Local exhaust and general ventilation recommended.

PROTECTIVE GLOVES:

Impervious gloves. Apply barrier cream before exposure. Do not apply cream after exposure.

EYE PROTECTION:

Chemical splash goggles.

OTHER PROTECTIVE EQUIPMENT:

As required to prevent wetting of skin and clothing.

#### **SECTION 9 - SPECIAL PRECAUTIONS**

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

This material may cause sensitization. Do not get in eyes, on skin or clothing. Do not allow clothing to contact skin. Avoid contact with vapors or fumes.

#### SPECIAL PRECAUTIONS:

Avoid contact with skin and eyes. Avoid breathing vapor. Keep container closed when not in use. Avoid prolonged exposure to light.

Store at temperatures below 120 F. Remove all contaminated ciothing, shoes, belts, and other leather goods immediately.

Solvents should not be used to clean skin because of increased penetration potential. Wash contaminated clothing before reuse.

#### **SECTION 10 - SUPPLEMENTAL INFORMATION**

REGULATORY INFORMATION: N/A

SARA HAZARD CLASSIFICATION: SARA Title III Regulations (40 CFR 370): N/A

#### SARA SECTION 313 LISTED INGREDIENTS:

This material does not contain any substance which is subject to the reporting requirements of 40 CFR 372.

#### DOT PROPER SHIPPING NAME:

SILICONE

UN NUMBER: N/A

This information is furnished without warranty, representation inducement or license of any kind, except that is accurate to the best of Polygem, Inc. knowledge, or obtained from sources believed by Polygem, Inc., to be accurate, and Polygem, Inc. does not assure any legal responsibility for use reliance upon the same. Customer are encouraged to conduct their own tests. Before using any product, read its tabel.

National Sanitary Supply Co. P.O. Box 61126 Los Angeles, Ca 90061 (213) 770-1970

10/13/97 2813 TOTONCHY, TALAL

11

1**93150** 

- Krika, ora

Takongri

ASH GROVE CEMENT WEST, INC. 13939 N RIVERGATE BLVD PORTLAND OR 97203-6608

Dear Customer,

Enclosed are the Material Safety Data Sheets (MSDSs) for products that your company recently purchased from National Sanitary Supply as required by the federal OSHA Hazard Communication Final Standard 29 CFR 1910. 1200.

National Sanitary is providing its customers with MSDSs to comply fully with the provisions of OSHA Standard and, by so doing, is attempting to help reduce in number and severity the incidence of chemical source injuries and illnessess in the workplace. It is hoped that by increasing the awareness of all who handle "hazardous" materials, the risk of injury will thereby be reduced. Please make these MSDSs readily available to all employees handling the chemicals.

Additionally, under the Standard, all chemical products are to have labels which are in English, legible and prominently displayed on the container. Please refuse any shipment of products in which the labels have become either disattached or illegible.

This letter and accompanying MSDS (s) were generated by our computer system which has been programmed to automatically print and mail MSDSs upon a customer's initial order of a "hazardous" product and when any updates occur in MSDSs already provided.

If you still have questions regarding the Standard or the interpretation of information on the MSDS (s) provided, please contact your appropriate sales representative.

Sincerely,

Maria F. Frias Executive Administration MATIONAL SANITARY SUPPLY CO. 13217 S. Figueroa Street 90061 Los Angeles, California

Manufacturer Manufacture:
SANI-FRESH INTERNATIONAL, INC.
4702 Goldfield Drive
San Antonio, TX 78218
MEDICAL EMERGENCY 1-800-228-5635 EXT. 140
CHEM-TEL 1-800-255-3924
INFORMATION 1-210-661-5374

#### IDENTIFICATION OF PRODUCT SECTION 1.

Product Name: WATERLESS SANI-FRESH CLEANSER

Product Code: 91215

Date Issued: 12/01/92 Supercedes: 06/21/91 National Item#: 1128XX

Page: 1 of 3

| SECTION 2. INGREDIENTS                                                                                    | OSHA<br>PEL                          | ACGIH<br>TLV                         | EXPOSURE<br>LIMITS                  | 7,                                  | CAS #                                                                     |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|---------------------------------------------------------------------------|
| D-LIMONENE (DIPENTENE) MINERAL DIL (AS MIST) TRIETHANDLAMINE C11-C12 ISOPARAFFIN OLEIC ACID POLYETHYLENE* | NE<br>5mg/m3<br>NE<br>NE<br>NE<br>NE | NE<br>5mg/m3<br>NE<br>NE<br>NE<br>NE | NE<br>NE<br>NE<br>SOOPP<br>NE<br>NE | 5-25<br>5-15<br>5-25<br>5-55<br>5-5 | 5989-27-5<br>8042-47-5<br>102-71-6<br>64742-48-9<br>112-80-1<br>9002-88-4 |

UNIDENTIFIED INGREDIENTS ARE NOT CONSIDERED HAZARDOUS UNDER THE FEDERAL HAZARD COMMUNICATION STANDARD (29 CFR-1910, 1200).

AS MIST

WATERLESS WITH GRIT CONTAINS POLYETHYLENE AND WATERLESS DOES NOT CONTAIN POLYETHYLENE.

#### SECTION 3. PHYSICAL & CHEMICAL CHARACTERISTICS

Boiling Point (F): NE Specific Gravity (H2 Vapor Pressure (mm Hq.): NE PH: 7.5 to 8.5 Vapor Density (Air=1): NE Reactivity in Water: Solubility in Water: APPRECIABLE Melting Point: N/A Evaporation Rate (BuAc=1): <1
Appearance and Odor: WHITE CREAMY LOTION WITH CITRUS ODOR.

Specific Gravity (H20=1): 0.882 PH: 7.5 to 8.5 Reactivity in Water: NONE Melting Point: N/A

Section 4. FIRE AND EXPLOSION DATA

Flash Point: 145F Method Used: PENSKE-MARTENS CLOSED CUP ASTM D-93
Flammable Limits In Air % By Volume: LEL=NE UEL=NE
Auto-Ignition Temperature: NE
Extinguishing Media: FOAM, DRY CHEMICAL OR CARBON DIOXIDE.
Special Fire Fighting Procedures: USE SUPPLIED-AIR BREATHING EQUIPMENT
FOR ENCLOSED OR CONFINED SPACES OR AS OTHERWISE NEEDED.
Unusual Fire & Explosion Hazards: NONE KNOW TO SANI-FRESH

Appendix33-001589

Product Name: WATERLESS SANI-FRESH CLEANSER

National Item#: 1128 Date Issued: 12/01/92

#### SECTION 5. PHYSICAL HAZARDS (REACTIVITY DATA)

Stability: STABLE Conditions to Avoid: NORMALLY STABLE. AVOID HEAT, OPEN FLAMES.

Incompatibility - Materials to Avoid: STRONG OXIDIZERS (SUCH AS LIQUID CHLORINE AND SODIUM HYPOCHLORITE).

Hazardous Polymerization: WILL NOT OCCUR
Hazardous Decomposition Products: FUMES, SMOKE CARBON MONOXIDE AND OTHER
DECOMPOSITION PRODUCTS IN CASE OF INCOMPLETE COMBUSTION

#### SECTION 6. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

Precautions To Be Taken In Handling And Stronge:
RECOMMEND STORAGE BETWEEN 40F AND 100F
Other Precautions: NONE
Steps To Be Taken In Case Material Is Released Or Spilled:
REMOVE HEAT AND IGNITION SOURCES; VENTILATE THE AREA; CLEAN UP WITH ABSORBENT.

Waste Disposal Methods (Consult Federal, State & Local Regulations):
FLUSH WASTE TO SEWER WITH LARGE AMOUNTS OF WATER, IF PERMITTED BY LOCAL,
STATE AND FEDERAL REGULATIONS.
Note: THIS PRODUCT DOES NOT CONTAIN ANY CHEMICALS OF REPORTABLE GUANTITIES
ON THE CURRENT COMMUNITY RIGHT-TO-KNOW SECTION 313, TITLE III LIST.

### SECTION 7. HEALTH HAZARDS

Acute: EYE IRRITATION, UPSET STOMACH

Acute: EYE INTITION, 10.000 Chronic: NE
Chronic: NE
Signs & Symptoms of Exposure: REDNESS AND ITICHING OF EYES
Medical Conditions Generally Aggravated By Exposure: NE
Chemical Listed as Carcinogen or Portential Carcinogen:
National Toxicology Program: NO
I.A.R.C. Monographs: NO

Emergency First Aid:
Eyes: IMMEDIATLY FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15
MINUTES WHILE HOULDING THE EYE LIDS OPEN. GET PROMPT MEDICAL ATTENTION.
Ingestion: CONTACT LOCAL POISON CONTROL CENTER OR PHYSICIAN
IMMEDIATELY.

Routes Of Entry: Inhalation: HIGHLY UNUSUAL Eyes: MAY OCCUR Skin: MAY OCCUR BUT UNLIKELY

Ingestion: MAY OCCUR Page: 2 of 3

Product Name: WATERLESS SANI-FRESH CLEANSER

National Item#: 1128 Date Issued: 12/01/92

SECTION 8. SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection: NOT NORMALLY REQUIRED

Ventilation: NOT GENERALLY NEEDED

Local Exhaust: ADEQUATE

Mechanical: ADEQUATE

Special: N/A Other: N/A

Protective Gloves: NOT NORMALLY NEEDED

IF POTENTIAL FOR EYE CONTACT EXISTS, WEAR CHEMICAL Eye Protection:

GOGGLES. Other Protective- Clothing or Equipment: NONE NORMALLY REQUIRED.

Work/Hugienic Practices: CLEAN-UP ALL SPILLS IMMEDIATELY, PRACTICE GOOD FERSONAL HYGIENE

Hazardous Materials Identification System Rating (HMIS)

HEALTH -1 FIRE -2 REACTIVITY -0

PERSONAL PROTECTION -A (SAFETY GLASSES)

NOTES: THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT SHOULD BE MADE BY THE MATERIAL USER BASED ON THE PARTICULAR PLANT CONDITIONS WHERE THE MATERIAL IS TO BE USED TOGETHER WITH INFORMATION CONTAINED IN THE PRODUCT M.S.D.S.

THIS MATERIAL SAFETY DATA SHEET PERTAINS TO ALL SANI-FRESH AND SANI-TUFF WATERLESS AND WATERLESS WITH GRIT CLEANSERS.

MEANS NOT ESTABLISHED

N/A MEANS NOT AVAILABLE

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD COMMUNICATION REGULATION.

Page: 3 of 3

Date: 10/17/97

No. 846

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

#### SECTION I

**PRODUCT NAME:** 

**GREENKLEEN-60** 

**GREENKLEEN-60 Plus** 

PRODUCT TYPE:

Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY:

 $SiO_2 = 30-35\%$ 

 $Al_2O_3 = 58-62\%$ 

FORMULA: Not Applicable

CaO =

2-4%  $Fe_2O_3 =$ 

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

| CHEMICAL                                             | TLV-TWA                                    | CAS#       |
|------------------------------------------------------|--------------------------------------------|------------|
| Cristobalite (SiO₂)<br>(<2%)                         | 0.05 mg/m <sup>3*</sup><br>Respirable Dust | 14464-46-1 |
| Quartz (SiO <sub>2</sub> )<br>( < 2%)                | 0.1 mg/m³*<br>Respirable Dust              | 14808-60-7 |
| Amorphous Silica (SiO <sub>2</sub> )<br>(4-6%)       | 2 mg/m³*<br>Respirable Dust                | 69012-64-2 |
| Alumina (Al <sub>2</sub> O <sub>3</sub> )<br>(8-12%) | 10 mg/m³*<br>Total Dust                    | 1344-28-1  |
| Refractory Cement (8-9%)                             | None (See Section IV)                      | 12005-57-1 |

\*Source: American Conference of Governmental Industrial Hygienists, 1996.

## SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Material Safety Data Sheet Product: GREENKLEEN-60, etc.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

# SECTION IV

#### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

irritation.

CHRONIC:

None Known

<u>SKIN:</u>

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

INHALATION: ACUTE:

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

**INGESTION:** 

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

#### SECTION V FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

None

**EXTINGUISHING MEDIA:** 

Not Combustible

FIRE FIGHTING INSTRUCTIONS:

No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

#### SECTION VI ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for

use), sweep or shovel up and place in a container for disposal.

### SECTION VII HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

### Anther participation is a series of the participation of the SECTION VIII of **EXPOSURE CONTROLS/PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** General mechanical ventilation is usually adequate (SECTION II),

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

**SKIN PROTECTION:** Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

Safety shoes should be worn to prevent foot injury from accidentally OTHER:

dropped bags of castable.

#### SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Gray to Tan, Granular Mixture **BOILING POINT:** Not Applicable

8-9 None " SOLUBILITY IN WATER: :: Slight ODOR:

**MELTING POINT:** SPECIFIC GRAVITY: 2.8 Not Applicable

#### SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

#### **SECTION XI TOXICOLOGICAL INFORMATION**

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

### **SECTION XII ECOLOGICAL INFORMATION**

Ecotoxicological/chemical fate information: not available.

#### **SECTION XIII DISPOSAL CONSIDERATIONS**

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

#### **SECTION XIV** TRANSPORT INFORMATION

U.S.A. DOT: Not Regulated

Canadian TDG Hazard Class & PIN: Not Regulated

### SECTION XV REGULATORY INFORMATION TO A SECURE OF SECURITION OF SECURITICS OF SECURITION OF SECURI

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI **OTHER INFORMATION**

MSDS Status: Replaces MSDS Dated 08/11/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

> Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\GK60.107

Date: 10/17/97

No. 846

### A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3826
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Polson Center

#### **SECTION I**

PRODUCT NAME:

**GREENKLEEN-60** 

**GREENKLEEN-60 Plus** 

PRODUCT TYPE:

Castable Refractory

Canadian WHMS Classification: D.2

NFPA Rating: 1-0-0

CHEMICAL FAMILY:

 $SiO_2 = 30-35\%$ 

 $Al_2O_3 = 58-62\%$ 

FORMULA: Not Applicable

CaO = 2-4% F

 $Fe_2O_3 = 1\%$ 

# SECTION II PRODUCT HAZARDOUS INCHEDIENTS

| CHEMICAL                                             |                | ILV-TWA                                 | CAS #      |
|------------------------------------------------------|----------------|-----------------------------------------|------------|
| Cristobalite (\$10 <sub>2</sub> )                    |                | 0:05 ing/m³*<br>Respirable Dust         | 14464-46-1 |
| Ouartz (SIO₁)<br>(<2%)                               |                | Od mg/m³*<br>Respirable Dust            | 14808-60-7 |
| Amorphous Silica (SiO <sub>2</sub> ) (4-6%)          | and the second | 2 mg/m <sup>3*</sup><br>Respirable Dust | 69012-64-2 |
| Alumina (Al <sub>2</sub> O <sub>3</sub> )<br>(8-12%) | ,              | 10 mg/m³*<br>Total Dust                 | 1344-28-1  |
| Refractory Cement                                    |                | None (See Section IV)                   | 12005-57-1 |

\*Source: American Conference of Governmental Industrial Hygienists, 1996.

# SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group (5. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Multiograph 05.

 Material Safety Data Sheet Product: GREENKLEEN-60, etc.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### **SECTION IV** FIRST AID MEASURES

#### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

irritation.

**CHRONIC:** 

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

None Known

INHALATION: ACUTE:

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

**INGESTION:** 

ACUTE:

Unknown

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

**INHALATION:** Remove to fresh air. Seek medical attention.

**INGESTION:** 

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

### SECTION V **FIRE FIGHTING MEASURES**

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS: None** 

#### SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

### SECTION VII HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

# SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

**ENGINEERING CONTROLS:** General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped bags of castable.

# SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Gray to Tan, Granular Mixture

**BOILING POINT:** 

pH:

8-9

SOLUBILITY IN WATER:

Slight

Not Applicable

ODOR:

None

SPECIFIC GRAVITY:

2.8

**MELTING POINT:** 

Not Applicable

# SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

## SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>so</sub> or LC<sub>so</sub> for oral, dermal, or inhalation routes of administration: no data for product.

# SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

## SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

Material Safety Data Sheet Product: GREENKLEEN-60, etc.

#### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated Not Regulated

Canadian TDG Hazard Class & PIN:

SECTION VV

### SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 08/11/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\GK60.107

Date: 12/12/97 Nos. 1905, 5120, 5111

### A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626 Transportation Emergencies — Contact CHEMTREC at 800-424-9300 International Emergencies — Contact CHEMTREC at 703-527-3887 Health Emergencies — Contact Your Local Poison Center

#### SECTION I

PRODUCT NAME:

SUPER HYBOND®

**GREENGUN-45** 

SUPER HYBOND® Plus

**GREENGUN-45 Plus** 

SUPER HYBOND® GR

SUPER HYBOND® GR Plus

SUPER BOND SUPER BOND Plus

SUPER HYBOND® J SUPER HYBOND® J Pius

SUPER HYBOND® S

SUPER HYBOND® S Plus

PRODUCT TYPE:

Plastic Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

**CHEMICAL FAMILY:** 

SiO<sub>2</sub> = 48-51%

= 43-46% -Al<sub>2</sub>O<sub>3</sub>

FORMULA: Not Applicable

Fe<sub>2</sub>O<sub>3</sub> 1-2% 1-3%

NaKO 1%

### SECTION II PRODUCT HAZARDOUS INGREDIENTS

**CHEMICAL** 

TLV-TWA

CAS#

Cristobalite (SiO<sub>2</sub>)

0.05 mg/m<sup>3\*</sup>

14464-46-1

(3-12%)

Respirable Dust

Quartz (SiO<sub>2</sub>)

0.1 mg/m<sup>3\*</sup>

14808-60-7

(1-4%)

Respirable Dust

2 mg/m<sup>3\*</sup>

10043-01-3

Aluminum Sulfate (<5%)

Glass Culiet (Powdered Glass)

(None)

(None)

(<5%)

\*Source: American Conference of Governmental Industrial Hygienists, 1997.

#### SECTION III **HAZARDS INFORMATION**

Since product contains aluminum sulfate, SO<sub>x</sub> fumes may be given off during burn-in.

Material Safety Data Sheet Product: SUPER HYBOND®, etc.

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD STANDARD ST Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### SECTION IV FIRST AID MEASURES

#### EFFECT OF OVEREXPOSURE:

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

INHALATION: ACUTE:

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

**INGESTION:** 

ACUTE:

Unknown

CHRONIC:

Unknown

### FIRST AID MEASURES:

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

#### SECTION V FIRE FIGHTING MEASURES

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

aluminum sulfate present, if heated to UNUSUAL FIRE AND EXPLOSION HAZARDS: The

decomposition, will emit toxic fumes of SO<sub>x</sub>.

### **SECTION VI ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

#### SECTION VII HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

#### SECTION VIII **EXPOSURE CONTROLS/PERSONAL PROTECTION**

General mechanical ventilation is usually adequate (SECTION II). **ENGINEERING CONTROLS:** 

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

**OTHER:** Safety shoes should be worn to prevent foot injury from accidentally

dropped containers of product.

SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Gray, Granular Mixture

**BOILING POINT:** 

Not Applicable

3-5

SOLUBILITY IN WATER:

None

ODOR:

pH:

None

SPECIFIC GRAVITY:

2.6

**MELTING POINT:** 

Not Applicable

#### SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

#### SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

#### SECTION XII **ECOLOGICAL INFORMATION**

Ecotoxicological/chemical fate information: not available.

Material Safety Data Sheet Product: SUPER HYBOND®, etc.

# SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

#### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

## SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 11/07/96

**Note:** This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\SHYBOND.127



## **Material Safety Data Sheet** for Calcium Hydroxide

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** 

(913) 451-8900

Information Telephone Number:

(913) 451-8900

**Chemical Name and Synonyms:** 

Calcium hydroxide, calcium dihydroxide, Ca(OH)<sub>3</sub>, słaked lime, hydrated

lime, lime, milk of lime, carboxide, caustic lime

Trade Name and Synonyms:

Snowflake, Kemilime, Slik

CAS No. 001-305-620

Date Reviewed:

March, 1998

### Section II - Hazardous Ingredients and Exposure Limits

CAS#

%

OSHA PEL

1994-95 ACGIH TLV

Calcium Hydroxide

1305-62-0

>1%

15 mg/m<sup>3</sup> total dust

 $5 \text{ mg/m}^3$ 

 $[Ca(OH)_2]$ 

5 mg/m<sup>3</sup> respirable dust

### Section III - Physical/Chemical Characteristics

Chemical Family:

Inorganic Base

Molecular Weight:

74.10

**Boiling Point:** Melting Point: Decomposes to calcium oxide above 580°C (-H<sub>2</sub>O) at 580°C; converts to calcium oxide

Vapor Pressure (mm Hg): Not Applicable

Specific Gravity:

2.24

Vapor Density:

(Air=1)0

Solubility in Water:

0.185 g/100 ml at 0°C

0.077 g/100 ml at 100°C

**Evaporation Rate:** 

Not Applicable

Appearance and Odor:

Soft white powder; odorless

### Section IV - Fire and Explosion Hazard Data

Flash Point (method used): Not Applicable; calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: Not Applicable; UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Hydrated lime is incombustible.

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

**CAUTION:** Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25 °C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

#### Section V - Health Hazard Data

Route(s) of Entry: Inhalation; skin; eyes; ingestion

#### 1. Inhalation: corrosive

- a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. Chronic exposure: Bronchial irritation with chronic cough is common.
- c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.

#### 2. Skin contact: corrosive

- a. Acute exposure: Lime in contact with unprotected skin can produce severe burns. Because of the solubility of lime, further penetration is possible and it may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.
- First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

#### 3. Eve contact: corrosive

- a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
- b. Chronic exposure: Prolonged contact may cause conjunctivitis.
- c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.

### Section V - Health Hazard Data - (Continued)

4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium hydroxide listed as an OSHA carcinogen: NO By NTP: NO By IARC: NO

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

### Section VI - Reactivity Data

**Stability:** Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (materials to avoid): maleic anhydride, Nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12.49, with water at temperatures of 25°C or above.

**Hazardous Decomposition or By-Products:** When heated above 580°C., calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: Not Applicable

### Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

<u>Handling:</u> Use protective equipment as described in Section VIII.

Storing: Protect against physical damage and store in dry place away from water or moisture.

#### Section VIII - Control Measures

**Respiratory Protection:** Wear a NIOSH approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium hydroxide

**Firefighting:** Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Steps to be taken in case material is Released or Spilled: Pick up spilled powder. Avoid contact and dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt; long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances. Class I and II.



## Material Safety Data Sheet for Lawn Lime

#### Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** Information Telephone Number: (913) 451-8900

(913) 451-8900

Chemical Name and Synonyms:

Lawn Lime

Chemical Family:

Primarily a mixture of calcium carbonate and calcium hydroxide and many

contain a minor amount of calcium oxide.

Revision Date:

March, 1998

### Section II - Hazardous Ingredients and Exposure Limits

|                                        | CAS<br>Number | OSHA PEL                                                                     | 1994-1995<br>ACGIH TLV |
|----------------------------------------|---------------|------------------------------------------------------------------------------|------------------------|
| Calcium carbonate, CaCO <sub>3</sub>   | 1317-65-3     | Total dust. 15 mg/m <sup>3</sup> Respirable fraction, 5 mg/m <sup>3</sup> ** | 10 mg/m³*              |
| Calcium hydroxide, Ca(OH) <sub>2</sub> | 1305-62-0     | 5 mg/m <sup>3</sup>                                                          | 5 mg/m³                |
| Calcium oxide, CaO                     | 1305-78-8     | 5 mg/m <sup>3</sup>                                                          | 2 mg/m³                |

<sup>\*</sup>Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

Lawn Lime can contain quartz >0.1%. The OSHA PEL for quartz is 10mg/m<sup>3</sup> respirable dust only. % SiO<sub>2</sub>+2

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m<sup>3</sup>.

<sup>\*\*</sup>Unless contains > 1% crystalline silica (quartz)

### Section III - Physical/Chemical Characteristics

Chemical Family:

Inorganic Base

Specific Gravity:

Approximate range 2.3 to 2.60

Vapor Pressure(mm Hg): 0

Vapor Density:

(Air=1) Not Applicable

Evaporation Rate: Solubility in Water:

Not Applicable 0.0014% (25°C)

Appearance and Odor:

Soft white powder or granules; faint odor

Melting Point:

Calcium hydroxide-decomposes above 600 °C Calcium carbonate-decomposes above 900 °C

## Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Lawn Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Lawn Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section

VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

#### Section V - Health Hazard Data

Lawn Lime can contain quartz crystalline silica greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

#### 1. Inhalation: corrosive

- a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking. dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. Chronic exposure: Bronchial irritation with chronic cough is common. Chronic overexposure may result in silicosis.
- c. **First aid:** Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

#### 2. Skin contact: corrosive

- a. Acute exposure: The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.
- c. **First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

#### 3. Eye contact: corrosive

- a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
- b. Chronic exposure: Prolonged contact may cause conjunctivitis.
- c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Lawn Lime listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO Quartz listed as an OSHA carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

## Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

## Section VII - Precautions for Safe Handling and Use

#### Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling:

Avoid generation of excessive dust.

Storing:

Protect against physical damage and store in dry place away from water or moisture.

#### Section VIII - Control Measures

Respiratory Protection: Use a NIOSH approved (42 CFR 84) respirator with dust filtering capability for protection against airborne lawn lime.

**Firefighting:** Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes: use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances. Class I and II.



# Material Safety Data Sheet For Portland Cement

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

**Emergency Telephone Number:** 

(913) 451-8900

Chemical Name and Synonyms:

Portland Cement (CAS #65997-15-1)

Trade Name and Synonyms:

Type I, IA, II, III, V

Revision Date:

March, 1998

Chemical Family:

Calcium Salts

Formula: Portland cement consists of finely ground portland cement clinker mixed with a small amount of calcium sulfate (gypsum) to control set. No specific formula applies to portland cement.

# Section II - Hazardous Ingredients

Ingredients: Substances similar to the following are known to be present in portland cement:

3CaO.SiO<sub>2</sub> (CAS # 12168-85-3) 2CaO.SiO<sub>2</sub> (CAS # 10034-77-2) 3CaO.Al<sub>2</sub>O<sub>3</sub> (CAS # 12042-78-3) 4CaO.Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub> (CAS # 12068-35-8) CaSO<sub>4</sub>,XH<sub>2</sub>O (CAS # 13397-24-5)

Small amounts of CaO, MgO, K<sub>2</sub>SO<sub>4</sub>, Na<sub>2</sub>SO<sub>4</sub> may also be present.

Hazardous Components(s):

| Substance                            | CAS Number | OSHA PEL                               | ACGIH TLV-TWA                             | MSHA Exposure Limits                   |
|--------------------------------------|------------|----------------------------------------|-------------------------------------------|----------------------------------------|
| Portland Cement – total dust         | 65997-15-1 | 15 mg/m <sup>3</sup>                   | 10 mg/m³ (1986) *                         | 10 mg/m <sup>3</sup>                   |
| Portland Cement -<br>respirable dust | 65997-15-1 | 5 mg/m <sup>3</sup>                    | 3 mg/m <sup>3</sup> (1995) *              | Not Applicable                         |
| Quartz                               | 14808-60-7 | 10 mg/m <sup>3</sup><br>(% silica + 2) | 0.1 mg/m³ (1986)<br>(respirable fraction) | 10 mg/m <sup>3</sup><br>(% silica + 2) |

Note: Some cements may contain small amounts of crystalline silica (slightly more than 0.1%). \* Applicable if <1% crystalline silica is present.

## Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable

Solubility in Water: Slight (0.1-1.0%)

Specific Gravity:  $(H_5O=1+2.9-3.1)$ 

Evaporation Rate: Not applicable.

Appearance and Odor: Gray powder; no odor.

Melting Point: Not applicable

## Section IV - Fire and Explosion Hazard Data

Flash Point: Portland cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

#### Section V - Health Hazard Data

Acute Effects: Wet cement on unprotected skin can cause severe caustic burns. NOTE: Cement burns skin with little warning. Dry cement can produce mild irritation to severe burns of the eye; it can irritate the upper respiratory system.

Chronic Effects: Dry cement can cause inflammation of the lining of the nose and the cornea. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium @ < 0.05%). Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

#### Section V - Health Hazard Data - Continued

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system); painful burning on exposed skin that can develop with little warning. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement and/or failure.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland coments are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings; seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

# Section VII-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Cement is highly alkaline and will react with acids to produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

## Section VII - Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

**Disposal Method:** Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

# Section VIII - Special Protection Information

Respiratory Protection: Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory Respirators and filters purchased after July 10, 1998 must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contac lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection: Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water.

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances. Class I and II.



# Material Safety Data Sheet for **Masonry Cement**

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** 

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Masonry Cement

Trade Name and Synonyms:

Masonry Cement, Masonry Cement Type N,

Masonry Cement Type \$

Revision Date: March, 1998

Chemical Family: Calcium Salts

Description: Masonry cement consists of portland cement, a finely ground portland cement clinker mixed with a small amount of gypsum to control set, calcium carbonate (i.e. limestone), and minor quantities (generally <1 percent) of chemical and/or mineral admixtures. Masonry cement may also contain quartz sand.

## Section II - Hazardous Ingredients

**Ingredients:** Substances similar to the following are known to be present in masonry cement:

3CaO.SiO<sub>2</sub> (CAS # 12168-85-3) 2CaO.SiO<sub>2</sub> (CAS # 10034-77-2) 3CaO.Al<sub>2</sub>O<sub>3</sub> (CAS # 12042-78-3) 4CaO.Al<sub>2</sub>O<sub>3</sub>.Fe<sub>2</sub>O<sub>3</sub> (CAS # 12068-35-8) CaSO<sub>4</sub>.XH<sub>2</sub>O (CAS # 13397-24-5) Calcium Carbonate (CAS # 1317-65-3)

Small amounts of CaO. MgO, K<sub>2</sub>SO<sub>4</sub>, Na<sub>2</sub>SO<sub>4</sub> may also be present.

## Section II - Hazardous Ingredients - Continued

Hazardous Components:

Quartz Sand (silica)

OSHA PEL:

 $10 \text{ mg/m}^2/\% \text{ S}_i\text{O}_2 = 2 \text{ (for respirable fraction)}$ 

ACGIH TLV (1994-95):

 $0.1 \text{ mg/m}^3$ 

Portland Cement

OSHA PEL:

10 mg/m<sup>3</sup> total dust\*

5 mg/m<sup>3</sup> respirable fraction

**ACGIH TLV** (1994-95):

10 mg/m<sup>3</sup> total dust\*

\*Only if less than 1% quartz and no asbestos is present. See PEL TLV for quartz, above.

Calcium Carbonate

OSHA PEL:

15 mg/m<sup>3</sup> total dust\*

5 mg/m<sup>3</sup> respirable fraction

ACGIH TLV (1994-95):

10 mg/3 total dust\*

\*Only if quartz is not present. See PEL/TLV for quartz above.

#### Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable, masonry cement is a powdered solid.

Solubility in Water: Slight (0.1-1.0%) Specific Gravity: (H<sub>2</sub>O=1) 2.8 - 3.0

Evaporation Rate: Not applicable

Appearance and Odor: Gray powder; no odor.

Melting Point: Not applicable

## Section IV-Fire and Explosion Hazard Data

Flash Point: Masonry cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

#### Section V-Health Hazard Data

Acute Effects: Wet cement on unprotected skin can cause severe caustic burns. NOTE: Cement burns skin with little warning. Dry cement can produce mild irritation to severe burns of the eye: it can irritate the upper respiratory system.

Chronic Effects: Dry cement can cause inflammation of the lining of the nose and the cornea. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium @ < 0.05%). Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system); painful burning on exposed skin that can develop with little warning. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement and/or failure.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland cements are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings: seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

### Section VI-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Contact with acids will produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved.

Hazardous Decomposition Products: None Hazardous Polymerization: Will not occur.

## Section VII-Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

**Disposal Method:** Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

## Section VIII - Special Protection Information

Respiratory Protection: Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contac lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection: Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water.

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



# Material Safety Data Sheet for Cement Kiln Dust

#### Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** 

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Cement Kiln Dust; CKD

Chemical Name and Synonyms: A mixture of sulfates, chlorides, carbonates, and oxides of sodium, potassium and calcium; quartz (CAS No. 01-4808-60-7), limestone (CAS No. 1317-65-3), fly ash, dolomite, feldspars, and iron oxides; glasses of silicon dioxide, aluminum oxide and iron oxide; and cement compounds (CAS No. 65997-15-1). Cement kiln dust (CKD) is a partially calcined mineral mixture created by electrostatic precipitators (ESPs) or by other air pollution control devices (APCDs), and deposited in ESP collection bins.

When waste-derived fuels comprise a part of the fuel source, CKD may contain 200-2000 ppm lead and traces of other heavy metals, including, but not limited to, arsenic, chromium, cadmium, antimony, barium, beryllium, silver, mercury, thallium, selenium and nickel.

Calcium oxide may also be present in freshly generated CKD. If CKD is mixed with water, the calcium oxide will hydrate to form calcium hydroxide.

Revision Date: March, 1998

#### Section II - Hazardous Ingredients

|                                                             | OSHA PEL                                         | 1994-1995<br>ACGIH TLV | Carcinogen<br>Status                 |
|-------------------------------------------------------------|--------------------------------------------------|------------------------|--------------------------------------|
| Inert or Nuisance Dust<br>Respirable Fraction<br>Total Dust | 5 mg/m³<br>15 mg/m³                              | 3 mg/m³<br>10 mg/m³    | Not<br>Applicable                    |
| Calcium oxide, Quicklime, CaO                               | 5 mg/m <sup>3</sup>                              | 2 mg/m³                | Not Applicable                       |
| Hydrated Lime, Ca(OH)2:Total: Respirable:                   | 15 mg/m <sup>3</sup><br>5 mg/m3                  | 5 mg/m³ (Total)        | Not Applicable                       |
| Respirable Quartz, Free Silica, SiO <sub>2</sub>            | $\frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$ | 0.1 mg/m³              | NTP - Yes<br>IARC - Yes<br>OSHA - No |
| Total Quartz, Free Silica, SiO <sub>2</sub>                 | $\frac{30 \text{ mg/m}^3}{\% \text{SiO}_2 + 2}$  | Not Applicable         | NTP - Yes<br>IARC - Yes<br>OSHA - No |

CKD contains greater than 0.1% crystalline silica.

Section II - Hazardous Ingredients (Continued)

|           | Metals - Repre             | esentative Exposure Limits      |                                       |
|-----------|----------------------------|---------------------------------|---------------------------------------|
|           | OSHA PEL                   | 1995-1996<br>ACGIH - TLV        | Carcinogen<br>Status                  |
| Arsenic   | 0.01 mg/m <sup>3</sup>     | 0.01 mg/m <sup>3</sup>          | OSHA - Yes<br>LARC - Yes<br>NTP - Yes |
| Chromium  | 1.0 mg/m <sup>3</sup>      | 0.50 mg/m <sup>3</sup>          | OSHA - No<br>IARC - Yes<br>NTP - Yes  |
| Cadmium   | 0.005 mg/m <sup>3</sup>    | 0.01 mg/m <sup>3</sup>          | OSHA - Yes<br>IARC - Yes<br>NTP - Yes |
| Lead      | 0.05 mg/m <sup>3</sup>     | 0.05 mg/m <sup>3</sup>          | OSHA - No<br>IARC - Yes<br>NTP - No   |
| Antimony  | 0.50 mg/m <sup>3</sup>     | 0,50 mg/m3                      | OSHA - No<br>IARC - No<br>NTP - No    |
| Barium    | 0.50 mg/m <sup>3</sup>     | 0.50 mg/m <sup>3</sup>          | OSHA - No<br>IARC - No<br>NTP - No    |
| Beryllium | 2 μg/m³                    | 2 μg/m³                         | OSHA - No<br>IARC - Yes<br>NTP - Yes  |
| Silver    | 0.01 mg/m <sup>3</sup>     | 0.01 mg/m <sup>3</sup>          | OSHA - No<br>IARC - No<br>NTP - No    |
| Mercury   | $C^* = 0.1 \text{ mg/m}^3$ | 0.025 mg/m <sup>3</sup> SKIN ** | OSHA - No<br>IARC - Yes<br>NTP - No   |
| Thallium  | 0.1 mg/m <sup>3</sup>      | 0.1 mg/m³, SKIN**               | OSHA - No<br>IARC - No<br>NTP - No    |
| Selenium  | 0.20 mg/m <sup>3</sup>     | 0.20 mg/m³                      | OSHA - No<br>IARC - Yes<br>NTP - Yes  |
| Nickel    | l mg/m³                    | 0.1 mg/m <sup>3</sup>           | OSHA - No<br>LARC - Yes<br>NTP - Yes  |

<sup>\*</sup>C = Ceiling

\*\* SKIN = can be absorbed through skin

#### Section III - Physical/Chemical Characteristics

Chemical Family:

Inorganic Base with mixed inorganic oxides and salts

Specific Gravity:

2.82

Vapor Pressure(mm Hg): N/A

(Air=1) N/A

Vapor Density: Evaporation Rate:

NA

Solubility in Water:

1.0 to 12%

Appearance and Odor:

Buff colored powder; odorless

Melting Point:

NI/A

#### Section IV - Fire and Explosion Hazard Data

Flash Point (method used): N/A: Cement Kiln Dust is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: N/A

Special Fire Fighting Procedures: Cement Kiln Dust is incombustible

Firefighting Media: N/A

CAUTION: Saturated water solutions of cement kiln dust can have pH of 12-12.5. See Section VII for appropriate

precautions.

Unusual Fire and Explosion Hazards: None

#### Section V - Health Hazard Data

Route(s) of Entry of cement kiln dust: Inhalation; skin; eyes; ingestion

#### 1. Inhalation:

- a. Acute exposure: Freshly generated CKD may be corrosive to damp moist skin if calcium oxide and calcium hydroxide are present. Inhalation of this dust may cause sore throat, coughing, choking, and dyspnea.
- b. Chronic exposure: Bronchial irritation with chronic cough may occur. CKD can contain crystalline silica in the respirable size range of particulate. Chronic long term exposure to respirable crystalline silica without the use of a respirator can cause silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. NTP and IARC list respirable crystalline silica as a carcinogen; OSHA and ACGIH do not.

#### 2. Skin contact:

- a. Acute exposure: Freshly generated CKD may be corrosive in contact with unprotected skin, due to the content of calcium oxide and calcium hydroxide (lime). Solutions of lime can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.

#### Section V - Health Hazard Data - (Continued)

- c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of CKD remains (approximately 15-20 minutes). In the case of chemical burns, due to the lime content of CKD, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: Freshly generated CKD may be corrosive to moist tissue around the eyes
  - a. Acute exposure: Direct contact with the freshly generated solid or aqueous solutions may cause conjunctival edema and/or corneal damage; can lead to and cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of CKD remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately. Do not induce vomiting.

#### Hazard Information About Trace Metals in CKD:

<u>Arsenic</u> – Routes of entry: inhalation, absorption, skin and/or eye contact, ingestion. Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuritis, respiratory system irritation; hyperpigmentation of skin. Target organs are liver, kidneys, skin, lungs and lymphatic system. Arsenic is associated with lung and lymphatic cancer.

<u>Chromium</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Chromium compounds are associated with eye irritation, allergic contact dermatitis and in some cases lung fibrosis. Target organs are the eyes, skin, and respiratory system.

<u>Cadmium</u> – Routes of entry: inhalation and ingestion. Cadmium dust may cause pulmonary edema and shortness of breath. Can result in cough, chest tightness, substernal pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, loss of the sense of smell, emphysma, proteinuria and mild anemia. The target organs are the respiratory system, kidneys, prostate and blood. Cadmium is associated with prostatic and lung cancer.

<u>Lead</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Lead is associated with weakness, fatigue, insomnia, facial pallor, anorexia, low weight, constipation, abdominal pain, anemia, lead line on gums, tremors, wrist paralysis, brain alterations, kidney disease, eye irritation and hypotension. The target organs are the GI tract, CNS, kidneys, blood and gingival tissue.

<u>Antimony</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes irritation of eyes, skin, nose, throat and mouth; dizziness; headache; nausea; vomiting; diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly. The target organs are the eyes, skin, respiratory system and CVS.

<u>Barium</u> – Routes of entry: inhalation, ingestion. Barium compounds can cause severe eye burns and skin irritation. It can cause muscle stimulation followed by paralysis with symptoms including nausea, vomiting, colic and diarrhea. Target organs are the skin, eyes and muscle system.

<u>Beryllium</u> – Routes of entry: inhalation and skin and/or eye contact. Chronic exposure causes berylliosis: anorexia, low weight, weakness, chest pain, cough, clubbing of fingers, cyanosis, and pulmonary insufficiency; also causes eye irritation and dermatitis. The target organs are the eyes, respiratory system, and skin. Beryllium is associated with lung cancer.

<u>Silver</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Can cause blue-gray discoloration of skin, eyes and mucous membranes; may cause irritation and ulceration of skin and GI tract disturbances. Target organs are nasal septum, skin and eyes.

<u>Mercury</u> – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes skin and eye irritation; cough, chest pain, shortness of breath, bronchial pneumonitis; tremors, insomnia, irritability, indecision, headache, fatigue, weakness, inflammation of the mouth, salivation, Gl tract disturbances, anorexia, weight loss and protein in the urine.

<u>Thallium</u> – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes nausea and vomiting, diarrhea and abdominal pain; eyelid drooping, loss of binocular vision, peripheral neuritis, tremors; retrosternal tightness, chest pain, pulmonary edema; seizures, involuntary body movements, psychosis; liver and kidney damage; hair loss, tingling in the legs. Target organs are eyes, respiratory system, CNS, liver, kidneys, GI tract, body hair.

<u>Selenium</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes eye, skin, nose and throat irritation; visual disturbances; headache; chills, fever; shortness of breath, bronchitis; metallic taste, garlic breath, GI tract disturbances; dermatitis; eye and skin burns. In animals causes: anemia; liver necrosis and cirrhosis; kidney and spleen damage. Target organs are the eyes, skin, respiratory system, liver, kidneys, blood, spleen.

<u>Nickel</u> – Roues of entry: inhalation, ingestion, skin and/or eye contact. Causes allergic dermatitis, allergic asthma, pneumonitis. Target organs are nasal cavities, lungs, skin. Nickel is associated with lung and nasal cancer.

## Section VI - Reactivity Data

**Stability:** Calcium oxide and calcium hydroxide, if present in CKD, will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate. Cement kiln dust consolidates when mixed with water. The resulting dry material sets loosely, preventing the material from becoming airborne. With excess water, calcium oxide and calcium hydroxide which may be present in freshly generated CKD can form a corrosive solution, pH 12-12.5.

Incompatibility (Materials to avoid): Contact with mineral acids will cause evolution of carbon dioxide with production of heat.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Handling, conveying, or releasing CKD as a dry dusty solid. Wetting CKD prior to all handling will prevent the substance from becoming airborne.

#### Section VII - Precautions for Safe Handling and Use

Handling: Use protective equipment as described in Section VIII.

Storing: CKD should be wet by water spray when discharging from ESP bins to avoid generation of dust when

conveying and depositing in landfill. No other precautions needed.

#### Section VIII - Control Measures

\_\_\_\_

**Respiratory Protection:** A NIOSH approved respirator must be used to control exposure below PELs and TLVs. Respirator must be effective in preventing exposure to respirable particulate composed of crystalline silica, lime and heavy metals at trace concentrations.

**Firefighting:** Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with cement kiln dust, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



# Material Safety Data Sheet for Calcium Oxide

# Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Calcium oxide. CaO. quicklime, lime, unslaked lime

Trade Name and Synonyms:

Pebble Quicklime, Cal-Max

CAS No.:

1305-78-8

Date Revised:

March, 1998

## Section II - Hazardous Ingredients

|                            | CAS Number | OSHA PEL                                                | 1994-1995<br>ACGIH TLV |
|----------------------------|------------|---------------------------------------------------------|------------------------|
| Quicklime, CaO             | 1305-78-8  | 5 mg/m <sup>3</sup>                                     | 2 mg/m³                |
| Quartz, crystalline silica | 14808-60-7 | $PEL = \frac{10 \text{mg/m}^{3}}{\% \text{SiO}_{2}*+2}$ | 0.1*                   |

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

# \*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists

OSH/

Occupational Safety and Health Administration

PEL TLV Permissible Exposure Limit Threshold Limit Value

# Section III - Chemical and Physical Data

Chemical Family:

Inorganic Base

Evaporation Rate: Not Applicable

Molecular Weight:

Boiling Point: 5162°C Melting Point: 4737°F.

Specific Gravity:

3.2-3.4

56.10

Vapor Density:

(Air=1) Not Applicable

**Solubility in Water:** 0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C

Appearance and Odor: White granular or powder, faint earthy odor

## Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable LEL: Not Applicable UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12-49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray. fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25 °C or above See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

# Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

#### Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes, ingestion

- 1. Inhalation: corrosive
  - a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
  - b. **Chronic exposure:** Bronchial irritation with chronic cough is common, chronic overexposure may result in silicosis
  - c. First aid: Remove from exposure, move to fresh air immediately. Keep affected person warm and at rest. Get medical attention
- 2. Skin contact: corrosive
  - a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
  - b. Chronic exposure: A chronic dermatitis may follow repeated contact.
  - c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention
- 3. Eye contact: corrosive
  - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

## Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate, stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur

Hazardous Decomposition or By-Products: None.

## Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25 °C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

#### Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation, use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium oxide

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water

This product neither contains nor is directly manufactured with any controlled ozone depleting substances. Class I and II



# Material Safety Data Sheet for Calcium Hydroxide

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

(913) 451-8900

(913) 451-8900

Overland Park, KS 66225

Emergency Telephone Number:

Information Telephone Number:

Chemical Name and Synonyms:

Calcium hydroxide, calcium dihydroxide, Ca(OH)2; staked time, hydrated

lime, lime, milk of lime, carboxide, caustic lime

Trade Name and Synonyms:

Snowflake, Kemilime, Slik

CAS No. 001-305-620

Date Reviewed:

March, 1998

Section II - Hazardous Ingredients and Exposure Limits

CAS#

0/0

OSHA PEL

1994-95 ACGIH TLV

Calcium Hydroxide

15 mg/m<sup>3</sup> total dust

5 mg/m<sup>3</sup>

[Ca(OH):]

1305-62-0 >1%

5 mg/m³ respirable dust

Section III - Physical/Chemical Characteristics

Chemical Family:

Inorganic Base

Molecular Weight:

74.10

Boiling Point:

Decomposes to calcium oxide above 580°C (-H<sub>2</sub>O) at 580°C; converts to calcium oxide

Melting Point:

Vapor Pressure (mm Hg): Not Applicable

Specific Gravity:

2.24

Vapor Density:

(Air=1)0

Solubility in Water:

0.185 g/100 ml at 0°C

0.077 g/100 ml at 100°C

Evaporation Rate:

Not Applicable

Appearance and Odor: Soft white powder: odorless

## Section IV - Fire and Explosion Hazard Data

Flash Point (method used): Not Applicable, calcium hydroxide is noncombustible and not explosive.

Flammable or Explosive Limits: LEL: Not Applicable: UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Hydrated lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires, use water spray or fog.

**CAUTION:** Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

#### Section V - Health Hazard Data

Route(s) of Entry: Inhalation, skin, eves, ingestion

#### 1. Inhalation: corrosive

- Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. Chronic exposure: Bronchial irritation with chronic cough is common.
- First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.

#### 2. Skin contact: corrosive

- a. Acute exposure: Lime in contact with unprotected skin can produce severe burns. Because of the solubility of lime, further penetration is possible and it may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.
- First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

#### 3. Eye contact: corrosive

- a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
- b. Chronic exposure: Prolonged contact may cause conjunctivitis.
- c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.

## Section V - Health Hazard Data - (Continued)

4. Ingestion: corrosive If ingested consult a physician immediately.

Calcium hydroxide listed as an OSHA carcinogen: NO By NTP: NO

By IARC: NO

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

# Section VI - Reactivity Data

**Stability**: Stable under normal temperatures and pressures. Calcium hydroxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (materials to avoid): maleic anhydride. Nitroparaffins, nitromethane, nitroethane, and nitropropane, all can form explosive salts with calcium hydroxide

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide forms a corrosive solution, pH 12-12-49, with water at temperatures of 25°C or above

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime

Conditions to Avoid: Not Applicable

## Section VII - Precautions for Safe Handling and Use

Precautions for safe handling, storage, and use:

Handling:

Use protective equipment as described in Section VIII.

Storing:

Protect against physical damage and store in dry place away from water or moisture.

#### Section VIII - Control Measures

Respiratory Protection: Wear a NIOSH approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium hydroxide

**Firefighting:** Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Process enclosure or local exhaust ventilation. Use mechanical ventilation to vent dust to collector

Steps to be taken in case material is Released or Spilled: Pick up spilled powder. Avoid contact and dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles

Other Protective Equipment: Long sleeve shirt, long pants, can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with hydrated lime, workers should shower with soap and water

This product neither contains nor is directly manufactured with any controlled ozone depleting substances. Class I and II.



# Material Safety Data Sheet for Calcium Oxide

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** 

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Calcium oxide. CaO, quicklime, lime, unslaked lime

Trade Name and Synonyms:

Pebble Quicklime, Cal-Max

CAS No.:

1305-78-8

Date Revised:

March, 1998

# Section II - Hazardous Ingredients

|                            | CAS Number | OSHA PEL                                            | 1994-1995<br>ACGIH TLV |
|----------------------------|------------|-----------------------------------------------------|------------------------|
| Quicklime, CaO             | 1305-78-8  | 5 mg/m³                                             | 2 mg/m³                |
| Quartz, crystalline silica | 14808-60-7 | PEL = $\frac{10 \text{mg/m}^3}{\% \text{SiO}_2*+2}$ | 0.1*                   |

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

#### \*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL

Permissible Exposure Limit

TLV

Threshold Limit Value

## Section III - Chemical and Physical Data

Chemical Family:

Inorganic Base

Evaporation Rate: Not Applicable

Molecular Weight:

Boiling Point: 5162°C

Melting Point: 4737°F.

Specific Gravity:

3,2-3,4

56.10

Vapor Density:

(Air=1) Not Applicable

Solubility in Water:

0.131 g/100 ml at  $10^{\circ}\text{C}$ ; 0.07 g/100 ml at  $80^{\circ}\text{C}$ Appearance and Odor: White granular or powder; faint earthy odor

# Section IV - Fire and Explosion Hazard Data

**Flash Point:** Not Applicable; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable

**LEL**: Not Applicable

**UEL:** Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

**CAUTION:** Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

#### Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

## Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

- 1. Inhalation: corrosive
  - a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
  - b. Chronic exposure: Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
  - c. **First aid:** Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- 2. Skin contact: corrosive
  - a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
  - b. Chronic exposure: A chronic dermatitis may follow repeated contact.
  - First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing.
     Bandage securely, but not too tightly. Get medical attention.
- 3. Eve contact: corrosive
  - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

#### Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

## Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25 °C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

#### Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

#### Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium oxide.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



# Material Safety Data Sheet for Calcium Oxide

## Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, K\$ 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Calcium oxide, CaO, quicklime, lime, unslaked lime

Trade Name and Synonyms:

Pebble Quicklime, Cal-Max

CAS No.:

1305-78-8

Date Revised:

March, 1998

## Section II - Hazardous Ingredients

|                            | CAS Number | OSHA PEL                                            | 1994-1995<br>ACGIH TLV |
|----------------------------|------------|-----------------------------------------------------|------------------------|
| Quicklime, CaO             | 1305-78-8  | 5 mg/m³                                             | 2 mg/m³                |
| Quartz, crystalline silica | 14808-60-7 | $PEL = \frac{10 \text{mg/m}^3}{\% \text{SiO}_2*+2}$ | 0.1*                   |

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

## \*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL

Permissible Exposure Limit

TLV

Threshold Limit Value

## Section III - Chemical and Physical Data

Chemical Family:

Inorganic Base

**Evaporation Rate:** Not Applicable

Molecular Weight:

56.10

Boiling Point: 5162°C

Melting Point: 4737°F.

Specific Gravity:

3.2 - 3.4

Vapor Density:

(Air=1) Not Applicable

Solubility in Water:

0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C Appearance and Odor: White granular or powder; faint earthy odor

# Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable

LEL: Not Applicable

UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12,49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

#### Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

## Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

- 1. Inhalation: corrosive
  - a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
  - Chronic exposure: Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
  - c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- Skin contact: corrosive
  - a. Acute exposure: During prolonged skin contact the substance can penctrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
  - Chronic exposure: A chronic dermatitis may follow repeated contact.
  - First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing.
     Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
  - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - c. **First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By JARC: NO Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or discases, dermatitis or other skin disorders may be aggravated by exposure.

#### Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

### Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25°C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

#### Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

#### Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium oxide.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



# Material Safety Data Sheet for Calcium Carbonate

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** 

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Substance:

Calcium Carbonate, Calcite, CaCO<sub>3</sub>, Ground Limestone, Ash Grove Grid

Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family:

Carbonate; weak inorganic base

Molecular Formula:

CaCO<sub>3</sub>

Revision Date:

April. 1998

# Section II - Hazardous Ingredients and Exposure Limits

|                                           | CAS#       | 9/0   | OSHA PEL                                       | 1994-95 ACGIH TLV       |
|-------------------------------------------|------------|-------|------------------------------------------------|-------------------------|
| Calcium Carbonate<br>(CaCO <sub>3</sub> ) | 1317-65-3  | >1%   | 15 mg/m³ total dust<br>5 mg/m³ respirable dust | 10 mg/m³**              |
| Silica (quartz)                           | 14808-60-7 | >0.1% | <u>10 mg/m³</u><br>% Silica* + 2               | $0.1 \text{ mg/m}^{3*}$ |

<sup>\*</sup> Respirable fraction

## Section III - Physical/Chemical Characteristics

Boiling Point: NA\*

Specific Gravity: 2.710

Vapor Pressure (mm Hg): 0

Melting Point: Decomposes 900 °C

Vapor Density: (Air=1) NA

**Evaporation Rate: NA** 

Solubility in Water: 0.0014% (25°C)

Appearance and Odor: White powder or granules; no odor

\*NA = Not applicable, solid material

<sup>\*\*</sup> For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain crystalline silica as an impurity.

### Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA

Flammable or Explosive Limits: NA LEL: NA HEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

\*NA = Not applicable, incombustible solid

### Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluoring gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) earbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

# Section VI - Health Hazard Data

### .....

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath. coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies. that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

### Section VII - Precautions for Safe Handling and Use

#### Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

#### Precautions to be Taken in Handling and Storing:

Handling: Avoid generation of excessive dust.

**Storing:** Protect against physical damage and store in dry place only to preserve product integrity.

#### Section VIII - Control Measures

**Ventilation:** Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting: Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



### Material Safety Data Sheet for AB3 Limestone

Section I - Identity

Manufacturer's name and address:

Shamrock Aggregates

23004 E. 24 Highway Independence, MO 64050

**Emergency Telephone Number:** 

(816) 792-1628

**Information Telephone Number:** 

(816) 329-8993

Substance:

AB3 Limestone, Calcium Carbonate, Calcite, CaCO<sub>3</sub>, Limestone, Lime

Rock, Road Rock

Chemical Family:

Carbonate; weak inorganic base

Molecular Formula:

CaCO<sub>3</sub>

Revision Date:

April, 1998

### Section II - Hazardous Ingredients

|                                        | CAS#       | <u>%</u> | OSHA PEL                                       | <u>1994-95 ACGIH TLV</u> |
|----------------------------------------|------------|----------|------------------------------------------------|--------------------------|
| Calcium Carbonate (CaCO <sub>3</sub> ) | 471-34-1   | >1%      | 15 mg/m³ total dust<br>5 mg/m³ respirable dust | 10 mg/m <sup>3</sup> **  |
| Silica (quartz)                        | 14808-60-7 | >0.1%    | 10 mg/m <sup>3</sup><br>% Silica* + 2          | 0.1 mg/m <sup>3</sup> *  |

<sup>\*</sup> Respirable fraction

### Section III - Physical/Chemical Characteristics

Boiling Point: NA\*

Specific Gravity: 2.710

Vapor Pressure(mmHg): 0 Vapor Density: (Air=1) NA Melting Point: Decomposes 900°C. Evaporation Rate: 0 (1652°F)

Solubility in Water: 0.0014% (25°C)

Appearance and Odor: White powder or granules; No odor

<sup>\*\*</sup> For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain silica as an impurity.

<sup>\*</sup>NA = not applicable, solid material

### Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA\*

Flammable Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

\*NA = Not Applicable

#### Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

#### Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

### Section VII - Precautions for Safe Handling and Use

### Steps to be Taken in Case Material is Released or Spilled:

Emergency measures not generally indicated.

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

### Precautions to be Taken in Handling and Storing:

**Handling:** Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

#### Section VIII - Control Measures

**Ventilation:** Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulate.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting: Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



### Material Safety Data Sheet for Calcium Carbonate

### Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** 

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Substance:

Calcium Carbonate, Calcite, CaCO<sub>3</sub>, Ground Limestone, Ash Grove Grid

Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family:

Carbonate; weak inorganic base

Molecular Formula:

CaCO<sub>3</sub>

Revision Date:

April, 1998

### Section II - Hazardous Ingredients and Exposure Limits

|                                           | CAS#       | <u>%</u> | OSHA PEL                                                               | 1994-95 ACGIH TLV       |
|-------------------------------------------|------------|----------|------------------------------------------------------------------------|-------------------------|
| Calcium Carbonate<br>(CaCO <sub>3</sub> ) | 1317-65-3  | >1%      | 15 mg/m <sup>3</sup> total dust<br>5 mg/m <sup>3</sup> respirable dust | 10 mg/m³**              |
| Silica (quartz)                           | 14808-60-7 | >0.1%    | $\frac{10 \text{ mg/m}^3}{\text{\% Silica*} + 2}$                      | 0.1 mg/m <sup>3</sup> * |

<sup>\*</sup> Respirable fraction

### Section III - Physical/Chemical Characteristics

Boiling Point: NA\*

Specific Gravity: 2.710

Vapor Pressure (mm Hg): 0

Melting Point: Decomposes 900°C

Vapor Density: (Air=1) NA

**Evaporation Rate: NA** 

Solubility in Water: 0.0014% (25°C)

Appearance and Odor: White powder or granules; no odor

\*NA = Not applicable, solid material

<sup>\*\*</sup> For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain crystalline silica as an impurity.

### Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA
Flammable or Explosive Limits: NA LEL: NA UEL: NA
Extinguishing Media: NA
Special Fire Fighting Procedures: NA
Firefighting Media: NA
Unusual Fire and Explosion Hazards: None
\*NA = Not applicable, incombustible solid

Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

**Hazardous Decomposition or By-Products:** When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

### Section VI - Health Hazard Data

Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

### Section VII - Precautions for Safe Handling and Use

#### Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

#### Precautions to be Taken in Handling and Storing:

Handling:

Avoid generation of excessive dust.

Storing:

Protect against physical damage and store in dry place only to preserve product integrity.

#### Section VIII - Control Measures

**Ventilation:** Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting:

Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

## MATERIAL SAFETY DATA SHEET

Date: 04/03/98

Nos. 1464, 3574,

5347, 5457

### A. P. GREEN REFRACTORIES, INC. and Subsidiaries GREEN BOULEVARD, MEXICO, MO 65265

Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

#### **SECTION I**

**PRODUCT NAME:** 

KRUZITE®-70

**BRICK MIX 1006** 

KRUZITE®-70 B

R-8008

KRUZITE® D

R-8008-M

KRUZITE® R

PRODUCT TYPE:

Refractory Bricks or Shapes

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

**CHEMICAL FAMILY:** 

 $SiO_2 = 24-28\%$ 

 $Al_2O_3 = 68-72\%$ 

FORMULA: Not Applicable

 $Fe_2O_3 = 1-2\%$ 

NaKO = 0.2-0.4%

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

| <u>CHEMICAL</u>                                            | <u>TLV-TWA</u>                             | CAS#       |  |
|------------------------------------------------------------|--------------------------------------------|------------|--|
| Cristobalite** (SiO <sub>2</sub> )<br>(7-11%)              | 0.05 mg/m <sup>3*</sup><br>Respirable Dust | 14464-46-1 |  |
| Quartz** (SiO <sub>2</sub> )<br>(O-2%)                     | 0.1 mg/m³*<br>Respirable Dust              | 14808-60-7 |  |
| Corundum * * (AI <sub>2</sub> O <sub>3</sub> )<br>(10-15%) | 10 mg/m³*<br>Total Dust                    | 1344-28-1  |  |

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1997.

## SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

<sup>\*\*</sup>Not mechanically separate from each other or other mineralogical phases in product as supplied.

man plant for Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### SECTION IV ~ FIRST AID MEASURES

#### EFFECT OF OVEREXPOSURE:

EYES:

ACUTE:

Dust or chips can cause mechanical irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Can cause cuts or abrasions.

CHRONIC:

None Known

INHALATION: ACUTE:

Dust, if present, may cause upper respiratory irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

. INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

**INGESTION:** 

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

### SECTION V **FIRE FIGHTING MEASURES**

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS: None** 

#### **SECTION VI** ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: For broken shapes or fragments, sweep, shovel up, or pick up and place in a container for disposal.

### SECTION VII HANDLING AND STORAGE

Store in a dry place, away from extreme heat. Product is non-flammable.

# SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Impervious gloves and long-sleeved and long-legged clothing should be

worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped bricks or shapes.

# SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

**Buff Solid** 

**BOILING POINT:** 

Not Applicable

pH:

Not Applicable
None

SOLUBILITY IN WATER:

SPECIFIC GRAVITY:

None 3.0-3.2

ODOR: MELTING POINT:

Not Applicable

## SECTION X

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

# SECTION XI TOXICOLOGICAL INFORMATION

STABILITY AND REACTIVITY

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

# SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

# SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

04/03/98

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Requiated

Canadian TDG Hazard Class & PIN:

Not Regulated

# SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 11/07/97

**Note:** This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Refractories, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Larry L. Lorensen

Quality Engineer

Phone: 573-473-3427

JH:\MSD\$\CURRENT\K70048

## MATERIAL SAFETY DATA SHEET

Date: 11/21/97

No. 5041, 1906, 8651 1807, 5274, 5552, 7325

### A. P. GREEN INDUSTRIES, INC. **GREEN BOULEVARD, MEXICO, MO 65265**

APGI Emergency Telephone Number -- Call 573-473-3626 Transportation Emergencies — Contact CHEMTREC at 800-424-9300 International Emergencies — Contact CHEMTREC at 703-527-3887 Health Emergencies — Contact Your Local Poison Center

#### **SECTION I**

PRODUCT NAME:

KS-4V

**KS-4V Plus** 

KS-4V GR

**KS-4V GR Plus** 

KS-4V AR **KS-4V AR Plus** 

MC-22

CaO

MC-22 Plus

MC-25

MC-25 Plus

**CASTABLE MIX 247** 

**CASTABLE MIX 247 Plus** 

**MEGACAST-24C** 

**MEGACAST-24C Plus** 

**GREEN 5C45** 

**GREEN 5C45 Plus** 

PRODUCT TYPE:

Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY:

SiO<sub>2</sub> = 39-47%

4-12%

 $Al_2O_3$ 

= 40-48%1-5%  $Fe_2O_3$ 

FORMULA: Not Applicable

### SECTION II

**CHEMICAL** 

**TLV-TWA** 

PRODUCT HAZARDOUS INGREDIENTS

CAS#

Cristobalite (SiO<sub>2</sub>)

0.05 mg/m<sup>3\*</sup>

14464-46-1

(5-20%)

Respirable Dust

Respirable Dust

Quartz (SiO<sub>2</sub>)

(<2%)

0.1 mg/m<sup>3\*</sup>

14808-60-7

Refractory Cement

(15-30%)

None (See Section IV)

12005-57-1

\*Source: American Conference of Governmental Industrial Hygienists, 1997.

#### **SECTION III** HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

11/21/97

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### **SECTION IV** FIRST AID MEASURES

### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

INHALATION: ACUTE:

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

**INGESTION:** 

ACUTE:

Unknown

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

**INHALATION**: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

### SECTION V **FIRE FIGHTING MEASURES**

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

FIRE FIGHTING INSTRUCTIONS:

No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

#### SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

#### SECTION VII HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

# SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

**SKIN PROTECTION:** Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped bags of castable.

## SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Grav

Gray, Granular Mixture

BOILING POINT: No

Not Applicable pH: None ODOR: 9-11

None

SOLUBILITY IN WATER: SPECIFIC GRAVITY:

2.7-2,8

MELTING POINT:

Not Applicable

# SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

# SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

# SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

# SECTION XIII DISPOSAL CONSIDERATIONS

<u>As supplied</u>, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

11/21/97

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

### SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III. Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 07/28/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\K\$4V.117

### **MATERIAL SAFETY DATA SHEET**

1065

Date: 12/31/97

Nos. 1065

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MQ 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

#### SECTION I

PRODUCT NAME:

MIZZOU® CASTABLE

MIZZOU® GR

MIZZOU® CASTABLE Plus

MIZZOU® GR Plus MIZZOU® GR Supra

MIZZOU® CASTABLE Supra MIZZOU® CASTABLE Supra Plus

MIZZOU® GR Supra Plus

PRODUCT TYPE:

Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

CHEMICAL FAMILY:

 $SiO_2 = 29-36\%$ 

= 2-4%

CaO

 $Al_2O_3 = 57-63\%$  $Fe_2O_3 = 1-2\%$  FORMULA: Not Applicable

### SECTION II

PRODUCT HAZARDOUS INGREDIENTS

| CHEMICAL                                             | TLV-TWA                        | CAS #      |
|------------------------------------------------------|--------------------------------|------------|
| Cristobalite (SiO <sub>2</sub> )<br>(5-15%)          | 0.05 mg/m³*<br>Respirable Dust | 14464-46-1 |
| Quartz ( $SiO_2$ ) (<2%)                             | 0.1 mg/m³*<br>Respirable Dust  | 14808-60-7 |
| Amorphous Silica (<5%)                               | 2 mg/m³*<br>Respirable Dust    | 69012-64-2 |
| Alumina (Al <sub>2</sub> O <sub>3</sub> )<br>(<5%)** | 10 mg/m³*<br>Total Dust        | 1344-28-1  |
| Refractory Cement (<15%)                             | None (See Section V)           | 12005-57-1 |

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1997.

## SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

<sup>\*\*</sup>MIZZOU® GR and MIZZOU® GR Plus only.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

### SECTION IV FIRST AID MEASURES

#### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

**INHALATION: ACUTE:** 

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

**INGESTION:** 

ACUTE:

Unknown

CHRONIC:

Unknown

#### FIRST AID MEASURES:

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

### **SECTION V FIRE FIGHTING MEASURES**

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS: None** 

#### SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for

use), sweep or shovel up and place in a container for disposal.

3

### SECTION VII HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

## SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped bags of castable.

# SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Gray, Granular Mixture

BOILING POINT: Not Applicable pH: 7-8

SOLUBILITY IN WATER: None ODOR: None

SPECIFIC GRAVITY: 2.7 MELTING POINT: Not Applicable

# SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

## SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

## SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

# SECTION XIII DISPOSAL CONSIDERATIONS

<u>As supplied</u>, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

12/31/97

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated Not Regulated

Canadian TDG Hazard Class & PIN:

# SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 02/29/96

**Note:** This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\MC.127



### Material Safety Data Sheet for Calcium Carbonate

| Section | 1 - 1 | dentity |
|---------|-------|---------|
|---------|-------|---------|

Manufacturer's name and address: Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Substance:

Calcium Carbonate, Calcite, CaCO3, Ground Limestone, Ash Grove Grid

Athletic Field Marker, Mineral Filler, Lime Rock

Chemical Family:

Carbonate, weak inorganic base

Molecular Formula:

CaCO:

Revision Date

April. 1998

### Section II - Hazardous Ingredients and Exposure Limits

|                                        | CAS #      | 0                                  | <u>OSHA PEL</u>                                | 1994-95 ACGIH TLA       |
|----------------------------------------|------------|------------------------------------|------------------------------------------------|-------------------------|
| Calcium Carbonate (CaCO <sub>3</sub> ) | 1317-65-3  | >1%                                | 15 mg/m² total dust<br>5 mg/m² respirable dust | 10 mg/m <sup>3</sup> ** |
| Silica (quartz)                        | 14808-60-7 | >() [ <sup>10</sup> / <sub>6</sub> | 10 mg/m <sup>2</sup><br>% Silica* + 2          | 0.1 mg m <sup>2</sup> * |

<sup>\*</sup> Respirable fraction

### Section III - Physical/Chemical Characteristics

Boiling Point: NA\*

Specific Gravity: 2.710

Vapor Pressure (mm Hg): 0

Melting Point: Decomposes 900°C

Vapor Density: (Air=1) NA

Evaporation Rate: NA

Solubility in Water: 0.0014% (25 C)

Appearance and Odor: White powder or granules, no odor

\*NA = Not applicable, solid material

<sup>\*\*</sup> For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain crystalline silica as an impurity.

### Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA
Flammable or Explosive Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

\*NA = Not applicable, incombustible solid

### Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize

### Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

### Section VII - Precautions for Safe Handling and Use

### Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

Precautions to be Taken in Handling and Storing:

Handling:

Avoid generation of excessive dust

Storing:

Protect against physical damage and store in dry place only to preserve product integrity

#### Section VIII - Control Measures

Ventilation: Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulates.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas. if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting: Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas

This product neither contains nor is directly manufactured with any controlled ozone depleting substances. Class I and II



ZEP MANUFACTURING COMPANY P.O. BOX 2015 ATLANTA, GEORGIA 30301

### MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

ISSUE DATE: 01/26/96

SUPERSEDES: Date printed: 05/20/98

ZEP SPIRIT II

Product No: 0679 Cleaner - Disinfectant - Deodoran

SECTION I - EMERGENCY CONTACTS

TELEPHONE: (404) 352-1680

BETWEEN 8:00 AM - 5:00 PM (EST) MEDICAL EMERGENCY: (770) 439-4200 NON OFFICE HOURS, WEEKENDS

AND HOLIDAYS, PLEASE CALL YOUR LOCAL POISON CONTROL (770) 432-2873 (770) 455-8160

(770) 552-8836 (770) 424-2048

(770) 424-4789

(770) 424-4789
TRANSPORTATION EMERGENCY:
(770) 922-0923
CHEMTREC:
(800) 424-9300 TOLL F
DISTRICT OF COLUMBIA:
(202) 483-7616 ALL CA **TOLL FREE - ALL CALLS RECORDED** 

**ALL CALLS RECORDED** 

**SECTION II - HAZARDOUS INGREDIENTS** EFFECTS (SEE NOTICE) % IN PROD. DESIGNATIONS (PPM) \*\* TETRASODIUM ETHYLENEDIAMINE TETRAACETATE \*\* N/D < 5 IRR ethylenedinitrilo tetraacetic acid, tetrasodium salt; EDTA;

SECTION III - HEALTH HAZARD DATA

SPECIAL NOTE: MSDS data pertains to the product as dispensed from the container. Adverse health effects would not be expected under recommended conditions of use (diluted) so long as prescribed safety precautions are practiced.

ACUTE EFFECTS OF OVEREXPOSURE:

This product, particularly in its concentrated form, may irritate eyes and skin upon contact. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, caling, reddening, or blistering.

Overexposure by inhalation may cause respiratory irritation.

CAS# 64-02-8; RTECS# AH5075000; OSHA PEL N/D

Exposure may aggravate existing skin disorders such as dermatitis.

CHRONIC EFFECTS OF OVEREXPOSURE:

Repeated or prolonged skin contact may produce chronic inflammation or dermatitis, characterized by redness, scaling or itching.

None of the ingredients are listed as carcinogens by IARC, NTP, or OSHA.

EST'D PEL/TLV: Not established PRIMARY ROUTES OF ENTRY: Inh, Skin.

HMIS CODES: HEALTH 1; FLAM. 0; REACT. 0; PERS. PROTECT. B; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN: Flush contaminated skin with plenty of water. Consult a physician if irritation develops.

EYES: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting upper and llower lids. Get medical attention at once.

INHALE: Move exposed person to fresh air. If irritation persists, get medical attention promptly.

INGEST: If swallowed, do not induce vomiting. If vomiting occurs, keep head below hip level. Get emergency medical attention immediately.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING: Wear nitrile gloves or use gloves with demonstrated resistance to the ingredients in this product.

EYE PROTECTION: Wear tight-fitting splash-proof safety glasses especially if contact lenses are worn.

RESPIRATORY PROTECTION: No extra measures are needed if ventilation is adequate.

VENTILATION: Provide local exhaust/ventilation as needed to keep concentration of vapors below exposure limits (PEL/TLV).

SECTION V - PHYSICAL DATA

~ 220 SPECIFIC GRAVITY: BOILING POINT (F):

**EVAPORATION RATE (WATER = 1):** VAPOR PRESSURE(mmHg): N/A pH(CONCENTRATE): APOR DENSITY(AIR = 1): N/A

COMPLETE pH(USE DILUTION OF ): SOLUBILITY IN WATER:

VOC CONTENT (CONCENTRATE): 0.0% 0.00 lb/gl

APPEARANCE AND ODOR: A THIN, CLEAR GREEN LIQUID WITH A CITRUS FRAGRANCE.

(Continued on Page: 2)

1.01

1.0 11.7-12.4

N/A

ZEP MANUFACTURING COMPANY MATERIAL SAFETY DATA SHEET

Product No: 0679 SECTION VI -FLASH POINT(C) (METHOD USED): None

SECTION VI - FIRE AND EXPLOSION DATA

FLASH POINT(C) (METHOD USED): None FLAMMABLE LIMITS: LEL: N/A UEL: N/A

|FLAMMABLE LIMITS: LEL: N/A UEL: N/A |EXTINGUISHING MEDIA: Noncombustible.

SPECIAL FIRE FIGHTING: Fire exposed drums should be cooled with stream of water. JNUSUAL FIRE HAZARDS: Wear self-contained positive pres. breathing apparatus.

SECTION VII - REACTIVITY DATA

STABILITY: Stable

INCOMPATIBLILITY(AVOID): Heat, sunlight, strong oxidizers, and acids.

POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: Carbon dioxide, carbon monoxide, and other unidentified organic

compounds.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

(TCC)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Observe safety procedures in section 4 & 9 during clean-up. Absorb spill on inert absorbent material (eg Zep-O-Zorb). Pick up and place residue in a suitable waste container or, if permitted, flush to sewer. Thoroughly rinse spill area with water.

WASTE DISPOSAL METHOD:

Liquid wastes are not permitted in landfills. This product is not considered a hazardous waste under RCRA. Unusable liquid may be absorbed on an inert absorbent material (eg. Zep-O-Zorb), drummed, and taken to a chemical or industrial landfill. In some areas disposal by flushing into a sanitary sewer with plenty of water may be permissible. Consult local, state, and federal agencies for proper disposal method in your area.

RCRA HAZ, WASTE NOS.: N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:

Store tightly closed container in a dry area at temps, between 40-120 degrees F.

Keep product away from skin and eyes.

Do not breathe spray mists or vapors.

Clothing or shoes which become contaminated with substance should be removed promptly and not reworn until thoroughly cleaned.

Geep out of the reach of children.

SECTION X - REGULATORY INFORMATION

DOT PROPER SHIPPING NAME: INDUSTRIAL CLEANERS N.O.I., LIQUID KEEP FROM

**FREEZING** 

NOTE: DOT information applies to larger package sizes of affected products. For some products, DOT may require alternate names and labeling in accordance with packaging group requirements.

DOT HAZARD CLASS:

DOT PACKING GROUP:

DOT I.D. NUMBER:

DOT LABEL/PLACARD:

EPA TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE

(Continued On Page 3)

PAGE: 2

\*\* NOTICE \*\*

Thank you for your interest in, and use of, Zep products.
Zep Manufacturing Co. is pleased to be of service to you by supplying this Material Safety Data Sheet for your files. Zep Manufacturing is concerned for your health and safety. Zep products can be used safely with proper protective equipment nd proper handling practices consistent with label instructions and the MSDS. Before using any Zep product, be sure to read the complete label and the Material Safety Data Sheet.

As a further word of caution, Zep wishes to advise that serious accidents have resulted from the misuse of "emptied" containers. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, or other sources of ignition; they may explode or develop harmful vapors and possibly cause injury or death. Clean empty containers by triple rinsing with water or an expressive solvent. Empty containers must be send to a drime. appropriate solvent. Empty containers must be send to a drum reconditioner before reuse.

### TERMS AND ABBREVIATIONS LISTED ALPHABETICALLY BY SECTION

SECTION II: HAZARDOUS INGREDIENTS

CAR; Carcinogen - A chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or OSHA as a definite or possible human cancer causing

AS #; Chemical Abstract Services Registry Number - A universally accepted numbering system for chemical substances. CBL; Combustible - At temperatures between 100F and 200F chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester. CNS; Central Nervous System depressant reduces the activity

of the brain and spinal cord. COR; Corrosive - Causes irreversible injury to living

tissue (e.g. burns).
DESIGNATIONS; Chemical and common names of hazardous ingredients

Ingredients.

EIR; Eye Irritant Only - Causes reversible reddening and/or inflammation of eye tissues.

EXPOSURE LIMITS; The time weighted average (TWA) airborne concentration at which most workers can be exposed without any expected adverse effects. Primary sources include ACGIH TLVs, and OSHA PELs (TWA, STEL and ceiling limits).

ACGIH; American Conference of Governmental Industrial

Hygienists

Hygienists.
CEILING: The concentration that should not be exceeded in the workplace during any part of the working exposure.
OSHA: Occupational Safety and Health Administration PEL; Permissible Exposure Limit - A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work week.
PPM: Parts per million - unit of measure for exposure limits.
(S) SKIN; Skin contact with substance can contribute to overall exposure.
STEL; Short Term Exposure Limit - Maximum concentration for a continuous 15-minute exposure period.
TLV; Threshold Limit Value - A set of time weighted average exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week.
FBL; Flammable - At temperatures under 100F, chemical gives off enough vapor to ignite if a source of ignition is present as tested with a closed cup tester.
HAZARDOUS INGREDIENTS; Chemical substances determined to be potential health or physical hazards by the criteria

potential health or physical hazards by the criteria established in the OSHA Hazard Communication Standard - 29 CFR

HTX; Highly toxic - the probable lethal dose for a 70kg (150

lb.) man and may be approximated as less than 6 teaspoons (2 tablespoons). IRR; Irritant - Causes reversible effects in living tissues

(e.g. inflammation) - primarily skin and eyes. N/A; Not Applicable - Category is not appropriate for this

product.
N/D; Not Determined - Insufficient information for a determination for this item.
RTECS#; Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances.

ARA; Superfund Amendments and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics

'elease Inventory. EN; Sensitizer - Causes allergic reaction after repeated

TOX; Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more.

SECTION III: HEALTH HAZARD DATA

ACUTE EFFECT; An adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

CHRONIC EFFECT; Adverse effects that are most likely to occur CHRONIC EFFECT; Adverse effects that are most likely to occur from repeated exposure over a long period of time. ESTD PEL/TLV; This estimated, time-weighted average, exposure limit, developed by using a formula provided by the ACGIH, pertains to airborne concentrations from the product as a whole. This value should serve as guide for providing safe workplace conditions to nearly all workers. HMIS CODES; Hazardous Material Identification System - a rating system developed by the National Paint and Coating Association for estimating the hazard potential of a chemical under normal workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas. workplace conditions. These risk estimates are indicated by a numerical rating given in each of three hazard areas (Health/Flammability/reactivity) ranging from a low of zero to a high of 4. A chronic hazard is indicated with a yes. Consult HMIS training guides for Personal Protection letter codes which indicate necessary protective equipment.

PRIMARY ROUTE OF ENTRY; The way one or more hazardous interesting the protection of the protectio ingredients may enter the body and cause a generalized-systemic

or specific-organ toxic effect.

ING; Ingestion - A primary route of exposure through

swallowing of material
INH; Inhalation - A primary route of exposure through

breathing of vapors. SKIN; A primary route of exposure through contact with

the skin.

SECTION IV: SPECIAL PROTECTION INFORMATION Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks.

MSHA; Mine Safety and Health Administration NIOSH; National Institute for Occupational Safety and Health

SECTION V: PHYSICAL DATA
EVAPORATION RATE; it refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).
pH; A value representing the acidity or alkalinity of an aqueous solution (Acidic pH = 1; Neutral pH = 7; Alkaline pH = 14)
VOC CONTENT; The percentage of or amount in pounds per gallon of the product that is regulated as a Volatile Organic Compound under the Clean Air Act of 1990 and various state jurisdictions SOLUBILITY IN WATER; A description of the ability of the

product to dissolve in water.

SECTION VII: REACTIVITY DATA
HAZARDOUS DECOMPOSITION; Breakdown products expected to be produced upon product decomposition or fire.
INCOMPATIBILITY; Material contact and the conditions to avoid to prevent hazardous reactions.
POLYMERIZATION; Indicates the tendency of the product's molecules to combine with themselves in a chemical reaction, releasing excess pressure and heat

releasing excess pressure and heat.

STABILITY; Indicates the susceptibility of the product to spontaneously and dangerously decompose.

SECTION VIII: SPILL AND DISPOSAL PROCEDURES RCRA WASTE NOS; RCRA (Resource Conservation and Recovery Act) waste codes (40 CFR 261) applicable to the disposal of spilled or unusable product from the original container.

SECTION X: TRANSPORTATION DATA
CWA; Clean Water Act- Federal Law which regulates chemical releases to bodies of water.
RQ; Reportable Quantity - The amount of the specific ingredient that, when spilled to the ground and can enter a storm sewer or natural watershed, must be reported to the National Response Center, and other regulatory agencies.
TSCA; Toxic Substances Control Act - a federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

DISCLAIMER

All statements, technical information and recommendations contained herein are based on available scientific tests or data which we believe to be reliable. The accuracy and data which we believe to be reliable. The accuracy and completeness of such data are not warranted or guaranteed. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with out products, may be used. Zep assumes no liability or responsibility for loss or damage resulting from the improper use or handling of our products, from incompatible product combinations, or from the failure to follow instructions, warnings, and advisories in the product's label and Material Safety Data Sheet.



A Member of The Didler Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER

MSDS # 3066-50

NORTH AMERICAN REFRACTORIES 500 HALLE BUILDING 1228 EUCLID AVENUE CLEVELAND, OHIO 44115-1809

Vendor:

Emergency Phone Number
U.S. (814) 234-7981 X250....D.Abrino
(814) 236-3890......K.Nelson
Canada (905) 639-8660.....D.Persaud

MSDS prepared by: NORTH AMERICAN REFRACTORIES Technical Center (814) 234-7981

Date Issued: 08/14/98 Date Revised: 11/04/97 Product Type: Refractory Castable / Gun Material Trade Name: DURAKAST 56ER

Product SARA Hazard Class:

(1) Immediate or Acute (Irritant)
(2) Delayed or Chronic
 Class D - Division 2 - Sub Division A WHMIS Hazard Class (CANADA):

Untested mixture containing a very toxic materic Class D - Division 2 - Sub Division B

Class D - Division 2 - Sub Division B

Untested mixture containing a toxic material

SARA NOTICE: This product DOES NOT contain any chemicals that are subject to the reporting requirements of section 313 of Title III of the Superfund Amend
ments and Reauthorization Act of 1986 and Part 48

CFR Part 372.

\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION \*\*\*\*\*

Fireclay Castable Al203.SiO2,CaO.Al203 Chemical Name: Chemical Family:

SECTION II - CHEMICAL COMPOSITION

Hazardous Ingredients: CAS Number: PCT:

Crystalline Silica including: N/A 10.0 - 30.0%

14808-60-7 Quartz Cristobalite 14464-46-1 15468-32-3 Tridymite

PCT: Other Ingredients: CAS Number:



# North American Refractories Co. A Member of The Didler Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

MSDS # 3066-50 cont.

2 page

| Alumina Silicate Hydrous Alumina Sili Hydraulic Setting Co<br>Organic Fibers Amorphous Silica                                                                            | ement                                                                            | 1302-93-8<br>12141-46-7<br>65997-16-2<br>9003-07-0<br>7631-86-9 | 1 <b>4</b> T <b>4</b> *                                                                | 15.0 -<br>5.0 -<br>10.0 -<br>0.1 -<br>10.0 - | 40.0%<br>10.0%<br>30.0%<br>30.0%<br>30.0% |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------|
| Appearance and Odor: Tan Specific Gravity: No Vapor Pressure (mm): Vapor Density (air=: Boiling Point (3F): Solubility in Water: pH: 9 to 10.9 range Density: 2.5 to 3.4 | granular,<br>ot available<br>Not applic<br>(): Not appl<br>Not availab<br>()Nil. | dry mixture<br>cable.<br>licable.<br>ole.                       |                                                                                        |                                              |                                           |
| ******* S                                                                                                                                                                | ECTION IV -                                                                      | FIRE AND EX                                                     | KPLOSION HAZARD                                                                        | *****                                        | *****                                     |
| Flammability: This production                                                                                                                                            |                                                                                  | lammable and                                                    | i will not supp                                                                        | ort                                          |                                           |
| **********                                                                                                                                                               | ECTION V - H                                                                     | HEALTH HAZAF                                                    | RD                                                                                     | *****                                        | ****                                      |
| Threshold Limit Value:<br>Fo                                                                                                                                             | OSHA: For F                                                                      | Respirable [                                                    | (% Quartz + 2)                                                                         | line sil                                     | ica:                                      |
|                                                                                                                                                                          | Cr                                                                               | artz<br>istobalite<br>idymite                                   | 0.1mg/m3<br>0.05mg/m3<br>0.05mg/m3                                                     |                                              |                                           |
| Effects of Overexposure:                                                                                                                                                 | OSHA:T.                                                                          | 10mg/n                                                          | listed above:<br>n3 total dust<br>n3 total dust                                        |                                              | e e                                       |
| ·                                                                                                                                                                        | Chronic exproblems.                                                              | posure to di                                                    | ust could cause                                                                        | pulmona                                      | ry.                                       |
|                                                                                                                                                                          | Low toxici<br>fibrosis di<br>all. Cemer<br>Note: LD50                            | ty via inha<br>ue to cement<br>nt may be ar<br>and LC50 is      | tation to skin<br>lation route. F<br>t dust occurs r<br>allergen in s<br>not available | olmonary<br>arely if                         | at                                        |
|                                                                                                                                                                          | CRYSTALLING<br>Chronic over<br>sized crys                                        | erexposure i                                                    | to dust contair<br>ica (quartz, cr                                                     | ning resp<br>Sistobali                       | irable<br>te,                             |



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

MSDS # 3066-50 cont.

3 page

and tridymite) can cause delayed lung injury (silicosis) or cancer. Points of attack:

Respiratory system and lungs.

Route of entry: Inhalation. Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

The International Agency for Research on Cancer (IARC) has classified crystalline silica as a Group 1 carcinogen, stating that "there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica..."

Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer

(1) IARC Monograph, Volume 42(2) NIOSH Document No. 75-120(3) NTP Report on Carcinogens

Toxicity data: Quartz:

LCLo: 300ug/m3 / 10Y-I inhalation human TCLo: 16 mppcf/8H/17.9Y-I Cristobalite: TCLo: inhalation human

TCLo: 16 mppcf/8H/17.9Y-I Tridymite: inhalation human

Note: LD50 and LC50 not available.

CARCINOGENICITY INFORMATION With the exception of:

Crystalline silica No ingredient in this product is found on either the Federal OSHA, NTP, or IARC list of

carcinogens.

Emergency and First Aid Data:
Skin: Wash thoroughly with soap and water.
Inhalation: Remove to fresh air. Eyes: Flush with water for 15 minutes and get

médical help.

\*\*\*\*\*\*

SECTION VI - REACTIVITY DATA

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Crystalline silica levels in used refractories may be higher or lower than as-shipped depending

\*\*\*\*\*



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

\*\*\*\*\*

MSDS # 3066-50 cont.

\*\*\*\*\*\*

page 4

WARNING: Steam spalling may occur from improper drying, curing, and firing (heat-up). Steam spalling of thick refractory sections can be explosive in character. Potential for serious injury exists from failure to follow the recommended schedule. This schedule is available from North American Refractories Co. For more information, contact your sales representative or call North American Refractories Co. 216-621-5200.

SECTION X - SPECIAL INFORMATION



Quartz

Other Ingredients:

Cristobalite

Tridymite

### North American Refractories Co.

A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

## NORTH AMERICAN REFRACTORIES PRODUCT SAFETY DATA SHEET

MANUFACTURER MSDS # 5020-00 NORTH AMERICAN REFRACTORIES 500 HALLE BUILDING 1228 EUCLID AVENUE Vendor: CLEVELAND, OHIO 44115-1809 Emergency Phone Number U.S. (814) 234-7981 X250...D.Abrino (814) 236-3890.....K.Nelson Canada (905) 639-8660....D.Persaud MSDS prepared by: NORTH AMERICAN REFRACTORIES Technical Center (814) 234-7981 Date Issued: 08/14/98
Product Type: Refractory Plastic Or Ram Material Trade Name: NARPHOS 85P
Product SARA Hazard Class: (1) Immediate or Acut Date Revised: 05/13/98 (1) Immediate or Acute (Irritant)
(2) Delayed or Chronic
Class D - Division 2 - Sub Division A
Untested mixture containing a very toxic material
Class D - Division 2 - Sub Division B WHMIS Hazard Class (CANADA): Untested mixture containing a toxic material SARA NOTICE: This product may contain a chemical(s) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and Part 40 CFR Part 372. For the name and amount of the subject chemical, see Section II - CHEMICAL COMPOSITION chemical, see Section II - CHEMICA of this Product Safety Data Sheet. \*\*\*\*\*\*\*\*\*\*\* SECTION I - PRODUCT IDENTIFICATION Chemical Name: Al203, SiO2, H3PO4 Chemical Family: Phos Bond High Alumina Refactories Plast SECTION II - CHEMICAL COMPOSITION CAS Number: PCT: Hazardous Ingredients: Crystalline Silica including: N/A 0.5 -1.5% 14808-60-7

14464-46-1

15468-32-3

CAS Number:

PCT:



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

MSDS # 5020-00 cont.

page 2

```
Hydrous Alumina Silicate
Alumina (non-fibrous)
Alumina Silicate
**Phosphate acid binder(as P205)
                                                           12141-46-7
1344-28-1
1302-93-8
                                                                                                              10.0
                                                                                                                           100.0%
5.0%
7.0%
                                                                                                              60.0
                                                                  7664-38-2
1302-78-9
                                                                                                                1.0
         Hydrous Alumina Silicate
                                                                                                                3.0
                                                                  7732-18-5
                                                                                                                               Ź.Ŏ%
         Water (added)
       **Chemical(s) subject to Section 313 of Title III of the SuperFund Amendments and Reauthorization Act of 1986 and CFR Part 372
                                         SECTION III - PHYSICAL DATA
Appearance and Odor: Gray, granular, wet mixture, odorless Odor threshold (p.p.m.): Not applicable. Specific Gravity: Not available. Vapor Pressure (mm): Not applicable. Vapor Density (air=1): Not applicable. Boiling Point (3F): Not available. Solubility in Water: Not available. % Volatile (by weight): Not applicable. pH: 2.5 to 5 range Density: Not available. Coefficient of Water/Oil Distribution: Not applicable.
         Coefficient of Water/Oil Distribution: Not applicable.
                                         SECTION IV - FIRE AND EXPLOSION HAZARD *
Flammability: This product is non-flammable and will not support
                          combustion.

Special fire fighting procedures: Use self-contained breathing apparatus.
Unusual Fire and Explosion Hazards:
           Thermal decomposition products from phosphate
           binder may be hazardous and may contain irritating
           phosphoric oxide fumes.
 *****
                                         SECTION V - HEALTH HAZARD
                                                                                                               *****
 Threshold Limit Value: Phosphoric Acid Mist
                                                                                  1 mg/m3
                                                respirable dust containing crystalline silica:
                                            GSHA: For Respirable Dust:

10 divided by (% Quartz + 2)
expressed in mg/m3.
                                                           Quartz.....0.1mg/m3
Cristobalite...0.05mg/m3
Tridymite....0.05mg/m3
                                             ACGIH:
                                         For all ingredients not listed above: OSHA:......10mg/m3 total dust ACGTH:......10mg/m3 total dust
Effects of Overexposure:
```



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

MSDS # 5020-00 cont.

3 page

Chronic exposure to dust could cause pulmonary problems.

CRYSTALLINE SILICA: Chronic overexposure to dust containing respirable sized crystalline silica (quartz, cristobalite, and tridymite) can cause delayed lung injury (silicosis) or cancer.

Points of attack: Respiratory system and

lungs.

Route of entry: Inhalation. Inhalation of dust containing crystalline silica may contribute to pre-existing pulmonary diseases such as asthma and lung disorders associated with the smoking of tobacco.

The International Agency for Research on Cancer (IARC) has classified crystalline silica as a Group 1 carcinogen, stating that "there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica..."

Crystalline silica has been listed in the most recent NTP Report on Carcinogens.

For more information on crystalline silica refer to:

(1) IARC Monograph, Volume 42 (2) NIOSH Document No. 75-120

(3) NTP Report on Carcinogens

Toxicity data: Quartz:

LCLo: 300ug/m3 / 10Y-I inhalation human

16 mppcf/8H/17.9Y-I Cristobalite: TCLo:

inhalation human 16 mppcf/8H/17.9Y-I

Tridomite: TCLo: inhalation human

Note: LD50 and LC50 not available.

PHOSPHATE BINDER:

Phosphate binder may irritate skin and eyes. PHOSPHATE ACID BINDER

The toxicology data listed below pertain to the concentrated form of the binder. Since the binder is diluted with water ion this product, effects are expected to be reduced.

TOXICÎTY: ORAL RAT LD50......1530 mg/kg body weight DERMAL RABBIT LD50.....2740 mg/kg body weight

EYE CONTACT--CORROSIVE--MAY CAUSE BURNS



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cleveland, Ohio 44115-1809 (216) 621-5200

MSDS # 5020-00 cont.

4 page

SKIN CONTACT--SEVERE IRRITANT--MAY CAUSE BURNS INHALATION--SEVERE IRRITANT INGESTION--burns to mouth, throat, and stomach

Chronic Effects: None identified.

CARCINOGENICITY INFORMATION With the exception of: Crystalline silica

No ingredient in this product is found on either the Federal OSHA, NTP, or IARC list of

carcinogens.

Emergency and First Aid Data:
EYE CONTACT: Immediately flush with large amounts of water for at least 15 minutes.
SEEK MEDICAL AID.

SKIN CONTACT: Wash thoroughly with soap and water If irritation persists, SEEK MEDICAL

ĀÌD.

INHALATION: Remove to fresh air. If breathing has stopped or is difficult, administer artificial respiration or oxygen as indicated. SEEK MEDICAL AID.

INGESTION: DO NOT INDUCE VOMITING! If victim is conscious give water, milk or milk of magnesia. SEEK MEDICAL AID.

SECTION VI - REACTIVITY DATA

Stability and Reactivity: This product is stable and non-reactive.

Hazardous Decomposition: Emits toxic fumes of phosphorus when heated. Crystalline silica levels in used refractories may be higher or lower than as-shipped depending on service conditions. Hygiene monitoring should be done to insure the proper employee protection during tearout.

> Flammable Hydrogen gas may be produced on prolonged contact between liquid components and metals.

\*\*\*\*\*

are drīed.

SECTION VII - SPILL AND LEAK PROCEDURES

Steps to be Taken in Case of a Spill: Avoid generating dust exposure when materials

Waste Disposal Method: Dispose of material according to local, state or federal regulations and as final used condition of the product dictates.



A Member of The Didier Group

500 Halle Building 1228 Euclid Avenue Cieveland, Ohio 44115-1809 (216) 621-5200

MSDS # 5020-00 cont.

page 5

WARNING: Steam spalling may occur from improper drying, curing, and firing (heat-up). Steam spalling of thick refractory sections can be explosive in character. Potential for serious injury exists from failure to follow the recommended schedule. This schedule is available from North American Refractories Co. For more information, contact your sales representative or call North American Refractories Co. 216-621-5200.

### **Material Safety Data Sheet**

### For Hardened Portland Cement Concrete Only

Providers of this MSDS must complete Section 1:

- Manufacturer's Name, Address
- Supplier's Name, Address
- Emergency Telephone Number

## Material Safety Data Sheet For Hardened Portland Cement Concrete

Section I - Identity Manufacturer's name and address: Supplier's name and address: **Emergency Telephone Number:** Chemical Name & Synonyms: Not applicable Trade Name & Synonyms: Ready mixed concrete; concrete; hardened concrete; non-plastic concrete; cement (as in "cement" sidewalk). **Revision Date:** October, 1998 Chemical Family: Portland cement concrete products Formula: Mixtures of cementitious materials, aggregates, minor percentages of chemical and mineral admixtures and water in various proportions. Molecular Weight: Not applicable Material Use: Construction material

Section II - Hazardous Ingredients of Material

Portland cement concrete is a mixture of gravel or rock, sand, portland cement and water. It may also contain chemical admixtures and/or fly ash and/or granulated slag and/or silica fume and/or other constituents that have no effect on the hazards associated with the use of the product. The chemical admixtures are present in quantities comprising less than 1% of the material.

| Portland Cement   | <u>CAS #</u><br>65997-15-1 | <u>%</u><br>>1% | $\frac{1994-95 \text{ TLV}}{10 \text{ mg/m}^3}$ | OSHA PEL<br>15 mg/m³ Total Dust                                            |
|-------------------|----------------------------|-----------------|-------------------------------------------------|----------------------------------------------------------------------------|
| Silica (quartz)   | 14808-60-7                 | >0.1%           | 0.1 mg/m <sup>3</sup> *                         | 5 mg/m <sup>3</sup> Respirable Dust<br>10 mg/m <sup>3</sup><br>% silica*+2 |
| Calcium Hydroxide | 1305-62-0                  | >1%             | 5 mg/m <sup>3</sup>                             | 15 mg/m <sup>3</sup> Total<br>5 mg/m <sup>3</sup> Respirable Dust          |

<sup>\*</sup> Respirable Fraction

| Section III - Physical Data of Material                                  |                                                                                                                                                                              |  |  |  |  |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
|                                                                          | Solid                                                                                                                                                                        |  |  |  |  |
| Physical State:                                                          | Solid                                                                                                                                                                        |  |  |  |  |
| Odor and Appearance:                                                     | Odorless, gray color; may be tan if color has been added.                                                                                                                    |  |  |  |  |
| Odor Threshold:                                                          | None                                                                                                                                                                         |  |  |  |  |
| Specific Gravity:                                                        | Normal range 1.5 to 2.9                                                                                                                                                      |  |  |  |  |
| Vapor Pressure:                                                          | Not applicable                                                                                                                                                               |  |  |  |  |
| Vapor Density:                                                           | Not applicable                                                                                                                                                               |  |  |  |  |
| Evaporation Rate:                                                        | Not applicable                                                                                                                                                               |  |  |  |  |
| Boiling Point:                                                           | Not applicable                                                                                                                                                               |  |  |  |  |
| Solubility in Water: 0.1%, max.; generally considered insoluble in water |                                                                                                                                                                              |  |  |  |  |
|                                                                          |                                                                                                                                                                              |  |  |  |  |
| Section IV - Fire and                                                    | Explosion Hazard of Material                                                                                                                                                 |  |  |  |  |
| Not applicable                                                           |                                                                                                                                                                              |  |  |  |  |
| Section V - Reactivity Data                                              |                                                                                                                                                                              |  |  |  |  |
| Stability: Stable                                                        |                                                                                                                                                                              |  |  |  |  |
|                                                                          | ith most acids in a neutralization-type reaction. Heat, is (such as HCl, NO or NO <sub>2</sub> ) may result depending on the the concrete may cause etching or other damage. |  |  |  |  |

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Appendix33-001682

#### Section VI - Health Hazard Data

Sawing, grinding, polishing, abrasive wear or demolition techniques may result in exposure to dust that may contain portland cement, calcium hydroxide and crystalline silica.

Acute Effects: The dust can dry the skin, cause alkali burns or irritation and irritate the eyes and the upper respiratory tract. Ingestion can cause inflammation of the throat. The coarse nature of the dust may be abrasive to skin. Water in contact with hardened portland cement concrete may release small amount of alkaline calcium hydroxide to the contact water. Alkaline water (i.e. pH >7) can cause skin and eye irritation.

Chronic Effects: Exposure to dust may cause inflammation of the tissue lining the interior of the nose and the comea of the eye. Hypersensitive people may develop allergic dermatitis. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis.

**Signs and Symptoms of Exposure:** Burning sensation around moist tissue areas (i.e. eyes, nose, and upper respiratory system). Redness or irritation at contact points where continuous rubbing occurs. Shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement of failure characterize silicosis.

**Medical Conditions Aggravated by Exposure:** Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Hardened concrete is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as Areasonably anticipated to be a carcinogen.≅ OSHA does not regulate silica as a carcinogen.

**Emergency First Aid Procedures:** Irrigate eyes immediately and repeatedly with large volumes of water and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings to abraded areas. In cases of accidental ingestion of dust, drink one or two glasses of milk or water. Do not induce vomiting. In cases of accidental ingestion of portland cement concrete contact water, drink one or two glasses of water. Do not induce vomiting. In cases of severe exposure, consult a physician.

#### Section VII - Preventive Measures

**Personal Protective Equipment:** Use impermeable gloves, boots and clothing to prevent skin contact with dust and contact water. Wear safety glasses or goggles to prevent contact of dust or of contact water with eyes. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators with dust filtering capability if exposed to dust from hardened concrete when sawing, grinding, polishing, removing abraded dust or using demolition techniques. (Advisory: Respirators and filters purchased after July 10, 1998 must be certified under 42 CFR 84.)

**Ventilation:** Local exhaust can be used to control airborne dust levels.

**Engineering Controls:** Provide ventilation when sawing, grinding, polishing, removing abraded dust or using demolition techniques to maintain dust concentrations below exposure limits listed in Section II.

**Leak and Spill Procedure:** Sweep and/or shovel dust into waste disposal containers. Use wet sweeping or flush with water for final clean up of floors, walkways, etc. Dispose of portland cement concrete dust in accordance with all local, state and federal requirements. Hardened portland cement concrete may be disposed on land or recycled to obtain the sand, gravel or crushed stone. Water in contact with hardened portland cement concrete does not require unusual disposal practices and may be allowed to evaporate in place or drain from the site.

## Material Safety Data Sheet For Unhardened Concrete Only

Providers of this MSDS must complete Section 1:

- Manufacturer's Name, Address
- Supplier's Name, Address
- Emergency Telephone Number

#### **Material Safety Data Sheet**

#### For

#### **Unhardened Concrete**

#### Section I - Identity

Manufacturer's name and address:

Supplier's name and address:

**Emergency Telephone Number:** 

Chemical Name & Synonyms:

Plastic concrete, concrete slurry, unset concrete

Date Revised:

October, 1998

### Section II - Hazardous Ingredients

Unhardened concrete is a slurry of portland cement, aggregate, silica sand, and various admixtures used to enhance concrete performance characteristics.

| Portland Cement | <u>CAS #</u><br>65997-15-1 | <u>%</u><br>>1% | 1994-95 TLV<br>10 mg/m <sup>3</sup> | OSHA PEL<br>15 mg/m³ Total Dust<br>5 mg/m³ Respirable Dust |
|-----------------|----------------------------|-----------------|-------------------------------------|------------------------------------------------------------|
| Silica (quartz) | 14808-60-7                 | >0.1%           | 0.1 mg/m <sup>3</sup> *             | 10 mg/m <sup>3</sup><br>% silica*+2                        |
| Calcium Oxide   | 1305-78-8                  | >1%             | 2 mg/m <sup>3</sup>                 | 5 mg/m <sup>3</sup>                                        |

<sup>\*</sup> Respirable fraction

NOTE: Unhardened concrete is a wet slurry and dusting is not a concern.

### Section III - Physical/Chemical Characteristics

**Boiling Point:** 

Not applicable

Specific Gravity ( $H_2O=1$ ):

2.20 - 2.60

Vapor Pressure (mmHg):

Not applicable

Melting Point:

Not applicable

Vapor Density (Air=1):

Not applicable

Evaporation Rate:

Not applicable

Solubility in Water:

Slight; 0.1-1.0%

Appearance and Odor:

Thick gray slurry; alkaline, earthy odor

#### Section IV - Fire and Explosion Hazard of Material

Flash Point (Method Used):

Not Applicable

Flammable Limits:

Not Applicable

LEL/UEL:

Not Applicable

Extinguishing Media:

Not Applicable

**Special Firefighting Procedures:** 

Not Applicable

Unusual Fire and Explosion Hazards: Not Applicable

#### Section V - Health Hazard Data

Route of Exposure:

Inhalation?

No

Skin?

Yes

Eyes?

Yes

Ingestion?

Yes

#### Health Hazards (acute and chronic):

Acute:

Contact with unhardened concrete and the Ableed≅ water can produce severe skin burns; development of pain symptoms may be delayed several hours. Irritation of both eyes and tissue lining of nose can be severe. Prolonged contact can cause severe alkali burns. Hypersensitive individuals may develop an allergic-type of dermatitis (cement in concrete may contain traces of chromium). Pre-existing skin conditions may be worsened.

Chronic:

Dermatitis can result from continued contact of unprotected skin with unhardened concrete. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis. Shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement characterizes silicosis. Silicosis may aggravate other chronic conditions and may increase the risk of pulmonary tuberculosis infection.

|                  | Unhardened <u>Concrete</u> | Portland<br><u>Cement</u> | Silica<br>(Quartz) | Calcium<br><u>Oxide</u> |
|------------------|----------------------------|---------------------------|--------------------|-------------------------|
| Carcinogenicity: |                            |                           |                    |                         |
| ·· NTP:          | No                         | No                        | Yes                | No                      |
| IARC:            | No                         | No                        | Yes                | No                      |
| OSHA regulated:  | No                         | No                        | No                 | No                      |

Respiratory exposure to silica in unhardened concrete is not a concern.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with water and get prompt medical attention. Wash exposed skin areas with soap and water.

Section VI - Reactivity Data

Stability: Unhardened concrete will consolidate and harden to a

continuous mass, compressive strength increasing with

time.

Incompatibility (Materials to Avoid): Not Applicable

Hazardous Decomposition or By-Products: Not Applicable

Hazardous Polymerization:

Will not occur:

Conditions to Avoid:

Not Applicable

#### Section VII - Precautions for Safe Handling and Use

Steps to be taken in case material is released or spilled: Emergency procedures are not required.

Waste disposal method: Material can be disposed of as common waste or returned to a container for later use if it is not contaminated.

Precautions to be taken in handling or storing: AVOID CONTACT WITH SKIN AND EYES. Skin of hands, feet, and lower legs, including the knees, is especially vulnerable (e.g., concrete finishers).

Other precautions: Use personal protective equipment (PPE) as described in Section VIII, Control Measures.

#### Section VIII - Control Measures

**Respiratory protection:** Respiratory protection should not be necessary when handling

unhardened concrete. However, a NIOSH-approved dust respirator is recommended when handling dry cement or when

cutting or otherwise abrading hardened concrete.

Ventilation: Local exhaust ventilation should not be necessary when handling

unhardened concrete. However, local exhaust ventilation can be used to control airborne dust levels that may be generated while handling dry cement or when cutting or otherwise abrading

hardened concrete.

Protective gloves: Select chemical and abrasion resistant gloves to provide protection

against skin contact with unhardened concrete and the Ableed≅ water. Avoid contaminating the inside of protective gloves with

concrete or bleed water.

**Eye Protection:** Use tight fitting goggles.

#### Other Protective Clothing or Equipment:

Use impermeable boots, gloves, aprons and clothing that will protect all potentially exposed skin, and prevent contact with unhardened concrete and the bleed water. Immediately remove and/or rinse with fresh water clothing that has become wetted or saturated by unhardened concrete or bleed water. Contaminated clothing that remains in contact with the skin can cause skin burns.

#### Work/Hygienic Practices:

Wash hands frequently during the workday with fresh water and pH-neutral soap. Immediately after working with unhardened concrete, workers should shower with pH-neutral soap and fresh water. Avoid placing hands in the rinse water used to clean tools; concrete residue in the rinse water causes the water to become highly alkaline. Precautions must be observed because the alkaline cement in concrete can cause severe burns without warning; little heat is sensed.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

4-10-98

## MATERIAL SAFETY DATA SHEET

Date: 08/11/97 No. 3901

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

#### **SECTION I**

**PRODUCT NAME:** 

GREENCAST®-45-L

GREENCAST®-45-L Plus

**PRODUCT TYPE:** 

Castable Refractory

Canadian WHMIS Classification: D,2

రావాణు ఉంది. గ్రామం ఉంది. ఈ కార్స్ క

NFPA Rating: 1-0-0

**CHEMICAL FAMILY:** 

1

SiO,

= 36-42%

 $Al_2O_3 = 44-50\%$ 

FORMULA: Not Applicable

CaO = 9-12%  $Fe_2O_3$  = 1-2%

## SECTION II PRODUCT HAZARDOUS INGREDIENTS

| <u>CHEMICAL</u>                             | <u>TLV-TWA</u>                 | CAS#       |
|---------------------------------------------|--------------------------------|------------|
| Cristobalite (SiO <sub>2</sub> )<br>(5-20%) | 0.05 mg/m³*<br>Respirable Dust | 14464-46-1 |
| Quartz (SiO <sub>2</sub> )<br>(<2%)         | 0.1 mg/m³°<br>Respirable Dust  | 14808-60-7 |
| Fume Silica (SiO <sub>2</sub> )<br>(<5%)    | 2 mg/m³*<br>Respirable Dust    | 69012-64-2 |
| Refractory Cement (25-35%)                  | None (See Section IV)          | 12005-57-1 |

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1996.

## SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

TO 10 10 联系

#### **SECTION IV** FIRST AID MEASURES

#### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

**INHALATION: ACUTE:** 

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

**INHALATION:** Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

#### SECTION V FIRE FIGHTING MEASURES

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS: None** 

#### **SECTION VI ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for

use), sweep or shovel up and place in a container for disposal.

#### **SECTION VII HANDLING AND STORAGE**

Store in a dry place. Product is non-flammable.

1

08/11/97

Product: GREENCAST®-45-L. etc.

#### **SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

**SKIN PROTECTION:** Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped bags of castable.

**SECTION IX** PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE:** Gray, Granular Mixture

**BOILING POINT:** 9-11 Not Applicable pH: **SOLUBILITY IN WATER:** None ODOR: None

SPECIFIC GRAVITY: **MELTING POINT:** Not Applicable 2.0

#### SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

#### SECTION XI **TOXICOLOGICAL INFORMATION**

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

#### **SECTION XII ECOLOGICAL INFORMATION**

Ecotoxicological/chemical fate information: not available.

#### SECTION XIII **DISPOSAL CONSIDERATIONS**

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

A

#### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated Not Regulated

Canadian TDG Hazard Class & PIN:

#### SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 02/20/97

**Note:** This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\GC45L.087



## Material Safety Data Sheet for Masonry Cement

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number: Chemical Name and Synonyms:

(913) 451-8900

Masonry Cement

Trade Name and Synonyms:

Masonry Cement. Masonry Cement Type N,

Masonry Cement Type S

Revision Date: March, 1998

Chemical Family: Calcium Salts

Description: Masonry cement consists of portland cement, a finely ground portland cement clinker mixed with a small amount of gypsum to control set, calcium carbonate (i.e. limestone), and minor quantities (generally <1 percent) of chemical and/or mineral admixtures. Masonry cement may also contain quartz

sand.

#### Section II - Hazardous Ingredients

Ingredients: Substances similar to the following are known to be present in masonry cement:

 $\begin{array}{lll} 3\text{CaO.SiO}_2 & (\text{CAS \# 12168-85-3}) \\ 2\text{CaO.SiO}_2 & (\text{CAS \# 10034-77-2}) \\ 3\text{CaO.Al}_2\text{O}_3 & (\text{CAS \# 12042-78-3}) \\ 4\text{CaO.Al}_2\text{O}_3.\text{Fe}_2\text{O}_3 & (\text{CAS \# 12068-35-8}) \\ \text{CaSO}_4.\text{XH}_2\text{O} & (\text{CAS \# 13397-24-5}) \\ \text{Calcium Carbonate} & (\text{CAS \# 1317-65-3}) \end{array}$ 

Small amounts of CaO, MgO, K2SO4, Na2SO4 may also be present.

#### Section II - Hazardous Ingredients - Continued

Hazardous Components:

Quartz Sand (silica)

**OSHA PEL:** 

 $10 \text{ mg/m}^3 / \% \text{ S}_i \text{O}_2 + 2 \text{ (for respirable fraction)}$ 

**ACGIH TLV** (1994-95):

 $0.1 \text{ mg/m}^3$ 

Portland Cement

**OSHA PEL:** 

10 mg/m3 total dust\*

5 mg/m3 respirable fraction

**ACGIH TLV** (1994-95):

10 mg/m3 total dust\*

\*Only if less than 1% quartz and no asbestos is present. See PEL TLV for quartz, above.

Calcium Carbonate

OSHA PEL:

15 mg/m<sup>2</sup> total dust\*

5 mg/m<sup>2</sup> respirable fraction

ACGIH TLV (1994-95):

10 mg/3 total dust\*

\*Only if quartz is not present. See PEL/TLV for quartz above.

#### Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable, masonry cement is a powdered solid.

Solubility in Water: Slight (0.1-1.0%) Specific Gravity: (H<sub>2</sub>O=1) 2.8 - 3.0 Evaporation Rate: Not applicable

Appearance and Odor: Gray powder; no odor.

Melting Point: Not applicable

#### Section IV-Fire and Explosion Hazard Data

Flash Point: Masonry cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

#### Section V-Health Hazard Data

Acute Effects: Wet cement on unprotected skin can cause severe caustic burns. NOTE: Cement burns skin with little warning. Dry cement can produce mild irritation to severe burns of the eye; it can irritate the upper respiratory system.

Chronic Effects: Dry cement can cause inflammation of the lining of the nose and the cornea. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium @ < 0.05%). Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system); painful burning on exposed skin that can develop with little warning. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement and/or failure.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland cements are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings: seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

#### Section VI-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Contact with acids will produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved.

Hazardous Decomposition Products: None Hazardous Polymerization: Will not occur.

#### Section VII-Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

**Disposal Method:** Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

#### Section VIII - Special Protection Information

Respiratory Protection: Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contac lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection: Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water.

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



## Material Safety Data Sheet for Durapoz™

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** 

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Calcined clay with gypsum

Trade Name and Synonyms:

Durapoz™

**Revision Date:** 

March, 1998

Chemical Family:

Pozzolans

**Description:** Durapoz<sup>™</sup> is a blended pozzolan consisting of calcined clay interground with gypsum. It is an additive used in making concrete.

#### Section II - Hazardous Ingredients

**Ingredients:** The following substances are known to be present in Durapoz™:

Amorphous alumino silicates Calcium sulfate dihydrate (gypsum) Forms of crystalline silica\*

\* Durapoz™ contains greater than 0.1% crystalline silica.

#### Section II - Hazardous Ingredients - Continued

#### **Hazardous Components:**

#### Amorphous Alumino Silicates (No CAS # Available)

ACGIH TLV-TWA (1989) = 10 mg/m<sup>3</sup> as inhalable particulates not otherwise classified (PNOC)
ACGIH TLV-TWA (1995) = 3 mg/m<sup>3</sup> as respirable particulates not otherwise classified (PNOC)

OSHA PEL (8-Hour TWA) =  $15 \text{ mg/m}^3$  as particulates not otherwise regulated (PNOR) total dust

OSHA PEL (8-Hour TWA) = 5 mg/m<sup>3</sup> as particulates not otherwise regulated (PNOR) respirable dust

#### Gypsum (CAS # 7778-18-9)

ACGIH TLV-TWA (1986) = 10 mg total dust /  $m^3$ OSHA PEL (8-Hour TWA) = 15 mg total dust /  $m^3$ OSHA PEL (8-Hour TWA) = 5 mg respirable dust /  $m^3$ 

#### Quartz (CAS# 14808-60-7)

ACGIH TLV-TWA (1986) = 0.10 mg respirable quartz dust /  $m^3$ OSHA PEL (8-Hour TWA) = (10 mg respirable quartz dust /  $m^3$ ) / (percent silica + 2) NIOSH REL (8-Hour TWA) = 0.05 mg respirable quartz dust /  $m^3$ 

#### Cristobalite (CAS# 14464-46-1) and Tridymite (CAS# 15468-32-3)

ACGIH TLV-TWA (1986) = 0.05 mg respirable cristobalite dust /  $m^3$ OSHA PEL (8-Hour TWA) = ((10 mg respirable cristobalite dust /  $m^3$ ) / (percent silica + 2)) ÷ 2 NIOSH REL (8-Hour TWA) = 0.05 mg respirable cristobalite dust /  $m^3$ 

#### Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable, Durapoz™ is a powdered solid.

Solubility in Water: Minimal; solubility is related to the presence of gypsum

Specific Gravity:  $(H_2O=1) 2.40 \pm 0.05$ 

Evaporation Rate: Not applicable

Appearance and Odor: Color ranges from buff to gray; no odor.

Melting Point: Not applicable

# Section IV-Fire and Explosion Hazard Data

Flash Point: Durapoz™ is noncombustible and not explosive.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

#### Section V-Health Hazard Data

Relevant Routes of Exposure: Skin contact, eye contact, and inhalation

Effects Resulting from Eye Contact: Dust in the eyes may result in mechanical irritation and inflammation.

Effects Resulting from Skin Contact: Exposure to dust from this product may cause mechanical irritation or inflammation of the skin.

Effects Resulting from Inhalation: Durapoz™ contains crystalline silica. Prolonged exposure to respirable crystalline silica may aggravate other lung conditions. It also may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or other diseases. (Also see "Carcinogenic Potential" below.)

Carcinogenic Potential: NTP, IARC or OSHA does not list calcined clay and gypsum as carcinogens.

Crystalline silica is now classified by IARC as a known human carcinogen (Group 1). NTP has characterized respirable silica as "reasonably anticipated to be [a] carcinogen."

Emergency and First Aid Procedures: Irrigate eyes immediately with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles and get prompt medical attention if irritation persists.

Remove dust from skin by flushing with water or by washing with soap and water.

If inhaled, remove person to fresh air. Seek medical help if coughing and other symptoms do not subside.

#### Section VI-Reactivity Data

Stability: Product is stable.

Incompatibility: No known incompatibilities.

Hazardous Decomposition Products: None Hazardous Polymerization: Will not occur.

### Section VII-Spill Procedures

Steps to be taken in case material is spilled: Use cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

Disposal Method: Dispose of waste material in accordance with Federal, State and local requirements. Since Durapoz™ is stable, uncontaminated material may be saved for future use. Durapoz™ is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261) and except for crystalline silica does not contain hazardous constituents.

#### Section VIII - Special Protection Information

Skin Protection: Wear long pants and long-sleeved shirts when handling Durapoz™. Protect hands with leather or cotton work gloves.

Eye Protection: Wear safety glasses with sideshields. In extremely dusty environments and unpredictable environments (e.g. windy), wear unvented or indirectly vented goggles to avoid eye irritation or injury.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



## Material Safety Data Sheet for Calcium Oxide

#### Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P O Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Calcium oxide, CaO, quicklime, lime, unslaked lime

Trade Name and Synonyms:

Pebble Quicklime, Cal-Max

CAS No .:

1305-78-8

Date Revised:

March, 1998

#### Section II - Hazardous Ingredients

|                            | CAS Number | OSHA PEL                                                     | 1994-1995<br>ACGIH TLV |
|----------------------------|------------|--------------------------------------------------------------|------------------------|
| Quicklime, CaO             | 1305-78-8  | 5 mg/m³                                                      | 2 mg/m²                |
| Quartz, crystalline silica | 14808-60-7 | $PEL = \frac{10 \text{mg/m}^{2}}{\% \text{SiO}_{2}^{*} + 2}$ | Q. 1*                  |

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

#### \*Respirable fraction

ACGIH American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL TLV

Permissible Exposure Limit Threshold Limit Value

#### Section III - Chemical and Physical Data

Chemical Family:

Inorganic Base

Evaporation Rate: Not Applicable

Molecular Weight:

56.10

Boiling Point: 5162°C Melting Point: 4737°F.

Specific Gravity:

3.2-3.4

Vapor Density:

(Air=1) Not Applicable

Solubility in Water:

0.131 g/100 ml at 10°C; 0.07 g/100 ml at 80°C

Appearance and Odor: White granular or powder, faint earthy odor

#### Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable, calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable LEL: Not Applicable UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12-49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12-49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

#### Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (LARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

#### Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eves, ingestion

- Inhalation: corrosive
  - a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
  - b. Chronic exposure: Bronchial irritation with chronic cough is common, chronic overexposure may result in silicosis.
  - c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- 2. Skin contact: corrosive
  - a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
  - b. Chronic exposure: A chronic dermatitis may follow repeated contact.
  - c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
  - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

#### Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None



## Material Safety Data Sheet For Duracem® Portland Cement

#### Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

**Emergency Telephone Number:** 

(913) 451-8900

Chemical Name and Synonyms:

Portland Cement (CAS #65997-15-1)

Trade Name and Synonyms:

Duracem®: IP

Revision Date:

March, 1998

Chemical Family:

Calcium Salts

Formula: Duracem® portland cement consists of finely ground portland cement clinker mixed with a pozzolanic material and a small amount of calcium sulfate (gypsum) to control set. No specific formula applies to portland cement.

### Section II - Hazardous Ingredients

Ingredients: Substances similar to the following are known to be present in portland cement:

3CaO.SiO<sub>2</sub> (CAS # 12168-85-3) 2CaO.SiO<sub>2</sub> (CAS # 10034-77-2) 3CaO.Al<sub>2</sub>O<sub>3</sub> (CAS # 12042-78-3) 4CaO.Al<sub>2</sub>O<sub>3</sub>.Fe<sub>2</sub>O<sub>3</sub> (CAS # 12068-35-8) CaSO<sub>4</sub>.XH<sub>2</sub>O (CAS # 13397-24-5)

Small amounts of CaO, MgO, K<sub>2</sub>SO<sub>4</sub>, Na<sub>2</sub>SO<sub>4</sub> may also be present.

Hazardous Components(s):

| Substance                            | CAS Number | OSHA PEL                                                             | ACGIH TLV-TWA                              | MSHA Exposure Limits                                                 |
|--------------------------------------|------------|----------------------------------------------------------------------|--------------------------------------------|----------------------------------------------------------------------|
| Portland Cement - total dust         | 65997-15-1 | 15 mg/m <sup>3</sup>                                                 | 10 mg/m <sup>3</sup> (1986) *              | 10 mg/m <sup>3</sup>                                                 |
| Portland Cement -<br>respirable dust | 65997-15-1 | 5 mg/m <sup>3</sup>                                                  | 3 mg/m³ (1995) *                           | Not Applicable                                                       |
| Quartz                               | 14808-60-7 | 10 mg/m <sup>3</sup><br>(% silica + 2)                               | 0.1 mg/m³ (1986)<br>(respirable fraction)  | $\frac{10 \text{ mg/m}^3}{(\% \text{ silica} + 2)}$                  |
| Cristobalite                         | 14464-46-1 | One half the value calculated by this formula:  10 mg/m <sup>3</sup> | 0.05 mg/m³ (1986)<br>(respirable fraction) | One half the value calculated by this formula:  10 mg/m <sup>3</sup> |
|                                      |            | (% silica + 2)                                                       |                                            | (% silica + 2)                                                       |

Note: Duracem® cement produced at the Leamington, Utah plant contains > 0.1% cristobalite. Duracem® cement from other Ash Grove plants contains > 0.1% quartz. \* Applicable if <1% crystalline silica is present.

#### Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable.

Solubility in Water: Slight (0.1-1.0%)

Specific Gravity:  $(H_2O=1) 2.9 - 3.1$ 

Evaporation Rate: Not applicable.

Appearance and Odor: Gray powder; no odor.

Melting Point: Not applicable

#### Section IV - Fire and Explosion Hazard Data

Flash Point: Portland cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable.

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

#### Section V - Health Hazard Data

Acute Effects: Wet cement on unprotected skin can cause severe caustic burns. NOTE: Cement burns skin with little warning. Dry cement can produce mild irritation to severe burns of the eye; it can irritate the upper respiratory system.

Chronic Effects: Dry cement can cause inflammation of the lining of the nose and the cornea. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium @ < 0.05%). Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

#### Section V - Health Hazard Data - Continued

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system): painful burning on exposed skin that can develop with little warning. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement and/or failure.

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland cements are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with soap and water. Apply sterile dressings: seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

#### Section VII-Reactivity Data

**Stability:** Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Cement is highly alkaline and will react with acids to produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

#### Section VII - Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

**Disposal Method:** Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

#### Section VIII - Special Protection Information

**Respiratory Protection:** Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998 must be certified under 42 CFR 84.)

Ventilation: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contac lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection: Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water.

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet cement in plastic concrete, mortar or slurries.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Note: This material safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal cement use. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



### Material Safety Data Sheet for Cement Kiln Dust

10 | 98

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Cement Kiln Dust: CKD

Chemical Name and Synonyms: A mixture of sulfates, chlorides, carbonates, and oxides of sodium, potassium and calcium; quartz (CAS No. 01-4808-60-7), limestone (CAS No. 1317-65-3). fly ash, dolomite, feldspars, and iron oxides; glasses of silicon dioxide, aluminum oxide and iron oxide; and cement compounds (CAS No. 65997-15-1). Cement kiln dust (CKD) is a partially calcined mineral mixture created by electrostatic precipitators (ESPs) or by other air pollution control devices (APCDs), and deposited in ESP collection bins.

When waste-derived fuels comprise a part of the fuel source, CKD may contain 200-2000 ppm lead and traces of other heavy metals, including, but not limited to, arsenic, chromium, cadmium, antimony, barium, beryllium, silver, mercury, thallium, selenium and nickel.

Calcium oxide may also be present in freshly generated CKD. If CKD is mixed with water, the calcium oxide will hydrate to form calcium hydroxide.

Revision Date: March, 1998

#### Section II - Hazardous Ingredients

|                                                       | OSHA PEL                                         | 1994-1995<br>ACGIH TLV                      | Carcinogen<br>Status                 |
|-------------------------------------------------------|--------------------------------------------------|---------------------------------------------|--------------------------------------|
| Inert or Nuisance Dust Respirable Fraction Total Dust | 5 mg/m³<br>15 mg/m³                              | 3 mg/m <sup>3</sup><br>10 mg/m <sup>3</sup> | Not<br>Applicable                    |
| Calcium oxide, Quicklime, CaO                         | 5 mg/m <sup>3</sup>                              | 2 mg/m <sup>3</sup>                         | Not Applicable                       |
| Hydrated Lime, Ca(OH)2:Total:<br>Respirable:          | 15 mg/m <sup>3</sup><br>5 mg/m3                  | 5 mg/m³ (Total)                             | Not Applicable                       |
| Respirable Quartz, Free Silica, SiO <sub>2</sub>      | $\frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$ | 0.1 mg/m³                                   | NTP - Yes<br>IARC - Yes<br>OSHA - No |
| Total Quartz, Free Silica, SiO2                       | $\frac{30 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$ | Not Applicable                              | NTP - Yes<br>IARC - Yes<br>OSHA - No |

Section II - Hazardous Ingredients (Continued)

|           | Metals - Repre             | esentative Exposure Limits      |                                       |
|-----------|----------------------------|---------------------------------|---------------------------------------|
|           | OSHA PEL                   | 1995-1996<br>ACGIH - TLV        | Carcinogen<br>Status                  |
| Arsenic   | 0.01 mg/m <sup>5</sup>     | 0.01 mg/m <sup>3</sup>          | OSHA - Yes<br>IARC - Yes<br>NTP - Yes |
| Chromium  | 1.0 mg/m <sup>3</sup>      | 0.50 mg/m <sup>3</sup>          | OSHA - No<br>IARC - Yes<br>NTP - Yes  |
| Cadmium   | 0.005 mg/m <sup>3</sup>    | 0.01 mg/m <sup>3</sup>          | OSHA - Yes<br>IARC - Yes<br>NTP - Yes |
| Lead      | 0.05 mg/m <sup>3</sup>     | 0.05 mg/m <sup>3</sup>          | OSHA - No<br>IARC - Yes<br>NTP - No   |
| Antimony  | 0.50 mg/m <sup>3</sup>     | 0.50 mg/m3                      | OSHA - No<br>IARC - No<br>NTP - No    |
| Barium    | 0.50 mg/m <sup>3</sup>     | 0.50 mg/m <sup>3</sup>          | OSHA - No<br>IARC - No<br>NTP - No    |
| Beryllium | 2 μg/m³                    | 2 μg/m³                         | OSHA - No<br>IARC - Yes<br>NTP - Yes  |
| Silver    | 0.01 mg/m <sup>3</sup>     | 0.01 mg/m <sup>3</sup>          | OSHA - No<br>IARC - No<br>NTP - No    |
| Mercury   | $C^* = 0.1 \text{ mg/m}^3$ | 0.025 mg/m <sup>3</sup> SKIN ** | OSHA - No<br>IARC - Yes<br>NTP - No   |
| Thallium  | 0.1 mg/m <sup>3</sup>      | 0.1 mg/m³, SKIN**               | OSHA - No<br>IARC - No<br>NTP - No    |
| Selenium  | 0.20 mg/m <sup>3</sup>     | 0.20 mg/m <sup>3</sup>          | OSHA - No<br>IARC - Yes<br>NTP - Yes  |
| Nickel    | 1 mg/m³                    | 0.1 mg/m <sup>3</sup>           | OSHA - No<br>IARC - Yes<br>NTP - Yes  |

<sup>\*</sup>C = Ceiling

\*\* SKIN = can be absorbed through skin

#### Section III - Physical/Chemical Characteristics

Chemical Family:

Inorganic Base with mixed inorganic oxides and salts

Specific Gravity:

2.82

Vapor Pressure(mm Hg): N/A

Vapor Density:

(Air=1) N/A

Evaporation Rate:

NA

Solubility in Water:

1.0 to 12%

Appearance and Odor:

Buff colored powder; odorless

**Melting Point:** 

N/A

#### Section IV - Fire and Explosion Hazard Data

UEL: NA

Flash Point (method used): N/A; Cement Kiln Dust is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA

Extinguishing Media: N/A

Special Fire Fighting Procedures: Cement Kiln Dust is incombustible

Firefighting Media: N/A

CAUTION: Saturated water solutions of cement kiln dust can have pH of 12-12.5. See Section VII for appropriate

precautions.

Unusual Fire and Explosion Hazards: None

#### Section V - Health Hazard Data

Route(s) of Entry of cement kiln dust: Inhalation; skin; eyes; ingestion

#### 1. Inhalation:

- Acute exposure: Freshly generated CKD may be corrosive to damp moist skin if calcium oxide and calcium hydroxide are present. Inhalation of this dust may cause sore throat, coughing, choking, and
- b. Chronic exposure: Bronchial irritation with chronic cough may occur. CKD can contain crystalline silica in the respirable size range of particulate. Chronic long term exposure to respirable crystalline silica without the use of a respirator can cause silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. NTP and IARC list respirable crystalline silica as a carcinogen; OSHA and ACGIH do not.

#### Skin contact: 2.

- Acute exposure: Freshly generated CKD may be corrosive in contact with unprotected skin, due to the content of calcium oxide and calcium hydroxide (lime). Solutions of lime can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact.
- Chronic exposure: A chronic dermatitis may follow repeated contact. b.

#### Section V - Health Hazard Data - (Continued)

- c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of CKD remains (approximately 15-20 minutes). In the case of chemical burns, due to the lime content of CKD, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: Freshly generated CKD may be corrosive to moist tissue around the eyes
  - a. Acute exposure: Direct contact with the freshly generated solid or aqueous solutions may cause conjunctival edema and/or corneal damage; can lead to and cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of CKD remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately. Do not induce vomiting.

#### Hazard Information About Trace Metals in CKD:

<u>Arsenic</u> – Routes of entry: inhalation, absorption, skin and/or eye contact, ingestion. Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuritis, respiratory system irritation; hyperpigmentation of skin. Target organs are liver, kidneys, skin, lungs and lymphatic system. Arsenic is associated with lung and lymphatic cancer.

<u>Chromium</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Chromium compounds are associated with eye irritation, allergic contact dermatitis and in some cases lung fibrosis. Target organs are the eyes, skin, and respiratory system.

<u>Cadmium</u> – Routes of entry: inhalation and ingestion. Cadmium dust may cause pulmonary edema and shortness of breath. Can result in cough, chest tightness, substernal pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, loss of the sense of smell, emphysma, proteinuria and mild anemia. The target organs are the respiratory system, kidneys, prostate and blood. Cadmium is associated with prostatic and lung cancer.

<u>Lead</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Lead is associated with weakness, fatigue, insomnia, facial pallor, anorexia, low weight, constipation, abdominal pain, anemia, lead line on gums, tremors, wrist paralysis, brain alterations, kidney disease, eye irritation and hypotension. The target organs are the GI tract, CNS, kidneys, blood and gingival tissue.

<u>Antimony</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes irritation of eyes, skin, nose, throat and mouth; dizziness; headache; nausea; vomiting; diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly. The target organs are the eyes, skin, respiratory system and CVS.

<u>Barium</u> – Routes of entry: inhalation, ingestion. Barium compounds can cause severe eye burns and skin irritation. It can cause muscle stimulation followed by paralysis with symptoms including nausea, vomiting, colic and diarrhea. Target organs are the skin, eyes and muscle system.

<u>Beryllium</u> – Routes of entry: inhalation and skin and/or eye contact. Chronic exposure causes berylliosis: anorexia, low weight, weakness, chest pain, cough, clubbing of fingers, cyanosis, and pulmonary insufficiency; also causes eye irritation and dermatitis. The target organs are the eyes, respiratory system, and skin. Beryllium is associated with lung cancer.

<u>Silver</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Can cause blue-gray discoloration of skin, eyes and mucous membranes; may cause irritation and ulceration of skin and Gl tract disturbances. Target organs are nasal septum, skin and eyes.

<u>Mercury</u> – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes skin and eye irritation; cough, chest pain, shortness of breath, bronchial pneumonitis; tremors, insomnia, irritability, indecision, headache, fatigue, weakness, inflammation of the mouth, salivation, GI tract disturbances, anorexia, weight loss and protein in the urine.

<u>Thallium</u> – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes nausea and vomiting, diarrhea and abdominal pain; eyelid drooping, loss of binocular vision, peripheral neuritis, tremors; retrosternal tightness, chest pain, pulmonary edema; seizures, involuntary body movements, psychosis; liver and kidney damage; hair loss, tingling in the legs. Target organs are eyes, respiratory system, CNS, liver, kidneys, GI tract, body hair.

<u>Selenium</u> – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes eye, skin, nose and throat irritation; visual disturbances; headache; chills, fever; shortness of breath, bronchitis; metallic taste, garlic breath, GI tract disturbances; dermatitis; eye and skin burns. In animals causes: anemia; liver necrosis and cirrhosis; kidney and spleen damage. Target organs are the eyes, skin, respiratory system, liver, kidneys, blood, spleen.

<u>Nickel</u> – Roues of entry: inhalation, ingestion, skin and/or eye contact. Causes allergic dermatitis, allergic asthma, pneumonitis. Target organs are nasal cavities, lungs, skin. Nickel is associated with lung and nasal cancer.

#### Section VI - Reactivity Data

Stability: Calcium oxide and calcium hydroxide, if present in CKD, will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate. Cement kiln dust consolidates when mixed with water. The resulting dry material sets loosely, preventing the material from becoming airborne. With excess water, calcium oxide and calcium hydroxide which may be present in freshly generated CKD can form a corrosive solution, pH 12-12.5.

Incompatibility (Materials to avoid): Contact with mineral acids will cause evolution of carbon dioxide with production of heat.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Handling, conveying, or releasing CKD as a dry dusty solid. Wetting CKD prior to all handling will prevent the substance from becoming airborne.

#### Section VII - Precautions for Safe Handling and Use

Handling: Use protective equipment as described in Section VIII.

Storing: CKD should be wet by water spray when discharging from ESP bins to avoid generation of dust when

conveying and depositing in landfill. No other precautions needed.

#### Section VIII - Control Measures

**Respiratory Protection:** A NIOSH approved respirator must be used to control exposure below PELs and TLVs. Respirator must be effective in preventing exposure to respirable particulate composed of crystalline silica, lime and heavy metals at trace concentrations.

**Firefighting:** Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

**Protective Gloves:** Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: Long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Immediately after working with cement kiln dust, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances. Class I and II.



## Material Safety Data Sheet for AB3 Limestone

Section I - Identity

Manufacturer's name and address:

Shamrock Aggregates

23004 E. 24 Highway Independence, MO 64050

**Emergency Telephone Number:** 

(816) 792-1628

Information Telephone Number:

(816) 329-8993

Substance:

AB3 Limestone, Calcium Carbonate, Calcite, CaCO<sub>3</sub>, Limestone, Lime

Rock, Road Rock

Chemical Family:

Carbonate; weak inorganic base

Molecular Formula:

 $CaCO_3$ 

**Revision Date:** 

April, 1998

### Section $\Pi$ - Hazardous Ingredients

|                                        | CAS#       | <u>%</u> | OSHA PEL                                       | 1994-95 ACGIH TLV       |
|----------------------------------------|------------|----------|------------------------------------------------|-------------------------|
| Calcium Carbonate (CaCO <sub>3</sub> ) | 471-34-1   | >1%      | 15 mg/m³ total dust<br>5 mg/m³ respirable dust | 10 mg/m <sup>3</sup> ** |
| Silica (quartz)                        | 14808-60-7 | >0.1%    | 10 mg/m <sup>3</sup> /8 Silica* + 2            | 0.1 mg/m <sup>3</sup> * |

<sup>\*</sup> Respirable fraction

#### Section III - Physical/Chemical Characteristics

Boiling Point: NA\*

Specific Gravity: 2.710

Vapor Pressure(mmHg): 0 Vapor Density: (Air=1) NA Melting Point: Decomposes 900°C. Evaporation Rate: 0 (1652°F)

Solubility in Water: 0.0014% (25°C)

Appearance and Odor: White powder or granules; No odor

<sup>\*\*</sup> For total dust containing no asbestos and <1% crystalline silica; calcium carbonate may contain silica as an impurity.

<sup>\*</sup>NA = not applicable, solid material

#### Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA\*

Flammable Limits: NA LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: NA

Firefighting Media: NA

Unusual Fire and Explosion Hazards: None

\*NA = Not Applicable

#### Section V - Reactivity Data

Stability: Stable under normal temperatures and pressures.

Incompatibility (Materials to avoid): Vigorous release of carbon dioxide when contacted with strong acids. Reacts violently with fluorine gas.

Hazardous Decomposition or By-Products: When heated at temperatures above 900°C (1652°F) carbon dioxide is liberated thereby forming calcium oxide.

Hazardous Polymerization: Does not polymerize.

#### Section VI - Health Hazard Data

Acute Effects: Calcium carbonate can be a simple mechanical irritant to the eyes, skin and upper respiratory system.

Chronic Effects: No known effects from exposure to calcium carbonate. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: As with any inert foreign object, calcium carbonate may cause irritation if it enters the eye. Skin redness may result if contact is due to abrasion. Silicosis is characterized by shortness of breath, coughing, diminished work capacity, reduced lung volume and heart enlargement or failure.

Medical Conditions Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Calcium carbonate is not considered carcinogenic. However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable silica as "reasonably anticipated to be a carcinogen." OSHA does not regulate silica as a carcinogen.

Emergency First Aid Procedures: Remove from eyes as would be done with any inert foreign object. Seek medical attention if irritation persists.

#### Section VII - Precautions for Safe Handling and Use

#### Steps to be Taken in Case Material is Released or Spilled:

Emergency measures not generally indicated.

Pick up spilled powder avoiding dusting conditions. Can be disposed as non-hazardous waste or reused. Wet sweeping may be used to avoid dusting. Residues can be flushed with water. Large quantities should not be flushed to surface waters or sewers.

#### Precautions to be Taken in Handling and Storing:

**<u>Handling:</u>** Avoid generation of excessive dust.

Storing: Protect against physical damage and store in dry place only to preserve product integrity.

#### Section VIII - Control Measures

**Ventilation:** Provide local exhaust ventilation or general dilution ventilation to meet permissible exposure limits for particulate.

Respiratory Protection: Avoid actions that cause dust to become airborne. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators (with dust filtering capability) in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Firefighting: Not Applicable

Eye Protection: Exposed individuals should wear tight fitting goggles in dusty areas.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



## Material Safety Data Sheet for Lawn Lime

#### Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number: Information Telephone Number:

(913) 451-8900

er:

(913) 451-8900

Chemical Name and Synonyms:

Lawn Lime

Chemical Family:

Primarily a mixture of calcium carbonate and calcium hydroxide and many

contain a minor amount of calcium oxide.

Revision Date:

March, 1998

## Section $\Pi$ - Hazardous Ingredients and Exposure Limits

|                                        | CAS<br>Number | OSHA PEL                                            | 1994-1995<br>ACGIH TLV |
|----------------------------------------|---------------|-----------------------------------------------------|------------------------|
| Calcium carbonate, CaCO <sub>3</sub>   | 1317-65-3     | Total dust, 15 mg/m³ Respirable fraction, 5 mg/m³** | 10 mg/m <sup>3</sup> * |
| Calcium hydroxide, Ca(OH) <sub>2</sub> | 1305-62-0     | 5 mg/m³                                             | 5 mg/m <sup>3</sup>    |
| Calcium oxide, CaO                     | 1305-78-8     | 5 mg/m³                                             | 2 mg/m³                |

<sup>\*</sup>Particulate not otherwise classified containing no asbestos and less than 1% crystalline silica

Lawn Lime can contain quartz >0.1%. The OSHA PEL for quartz is  $\frac{10\text{mg/m}^3}{\% \text{SiO}_2+2}$  respirable dust only.

The 1994-95 ACGIH TLV for quartz is 0.1 mg/m<sup>3</sup>.

<sup>\*\*</sup>Unless contains > 1% crystalline silica (quartz)

#### Section III - Physical/Chemical Characteristics

Chemical Family:

Inorganic Base

Specific Gravity:

Approximate range 2.3 to 2.60

Vapor Pressure(mm Hg): 0

Vapor Density:

(Air=1) Not Applicable

Evaporation Rate: Solubility in Water: Not Applicable 0.0014% (25°C)

Appearance and Odor:

Soft white powder or granules; faint odor

Melting Point:

Calcium hydroxide-decomposes above 600°C Calcium carbonate-decomposes above 900°C

## Section IV - Fire and Explosion Hazard Data

Flash Point (method used): NA; Lawn Lime is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: NA

Special Fire Fighting Procedures: Lawn Lime is incombustible

Firefighting Media: Dry chemical, carbon dioxide, water spray or foam. For larger fires use water spray or fog.

CAUTION: Saturated water solutions of calcium hydroxide or calcium oxide can have pH of 12-12.49. See Section

VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

#### Section V - Health Hazard Data

Lawn Lime can contain quartz crystalline silica greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Route(s) of Entry of calcium hydroxide, calcium oxide, and calcium carbonate: Inhalation; skin; eyes; ingestion

#### 1. Inhalation: corrosive

- a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- b. Chronic exposure: Bronchial irritation with chronic cough is common. Chronic overexposure may result in silicosis.
- c. First aid: Remove from exposure; move to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention.

#### 2. Skin contact: corrosive

- a. Acute exposure: The substance can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility may allow further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.
- First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing.
   Bandage securely, but not too tightly. Get medical attention.

#### 3. Eye contact: corrosive

- a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction; can lead to and may cause blindness.
- b. Chronic exposure: Prolonged contact may cause conjunctivitis.
- c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Lawn Lime listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO Quartz listed as an OSHA carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

### Section VI - Reactivity Data

Stability: Stable under normal temperatures and pressures. Calcium hydroxide and calcium oxide will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate.

Incompatibility (Materials to avoid): maleic anhydride, nitroparaffins, nitromethane, nitroethane, and nitropropane; all can form explosive salts with calcium hydroxide.

Phosphorous, when boiled with alkaline hydroxides, yields mixed phosphines which may ignite spontaneously in air.

Hazardous Polymerization: Will not occur.

Water: Calcium hydroxide and calcium oxide form corrosive solutions with water; pH: 12-12.49.

Hazardous Decomposition or By-Products: When heated above 580°C, calcium hydroxide loses water to form calcium oxide, quicklime.

Conditions to Avoid: NA

### Section $V\Pi$ - Precautions for Safe Handling and Use

#### Steps to be Taken in Case Material is Released or Spilled:

Pick up spilled powder; avoiding dusting conditions. Spills should not be flushed to surface waters or sewers. Dispose of in accordance with all applicable local, state and federal requirements.

Handling:

Avoid generation of excessive dust.

Storing:

Protect against physical damage and store in dry place away from water or moisture.

#### Section VIII - Control Measures

Respiratory Protection: Use a NIOSH approved (42 CFR 84) respirator with dust filtering capability for protection against airborne lawn lime.

**Firefighting:** Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Ventilation: Enclose all dusty processes: use local exhaust ventilation. Use mechanical ventilation to vent dust to collector.

Protective Gloves: Gauntlet type work gloves.

Eye Protection: Tight fitting goggles.

Other Protective Equipment: To avoid contact with skin, use long sleeve shirt and long pants; can use protective cream on exposed skin areas.

Work/Hygienic Practices: Avoid skin contact with product. If skin contact has occurred promptly remove from skin with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



4004

MSDS No:

151-2

Date Prepared:

03/28/1995

Revised/Reviewed: 06/01/1998

## 1. PRODUCT AND COMPANY IDENTIFICATION

Material Name:

Crystalline Silica Containing Product

Common Name: Intended Use: Insulating Firebrick and Firebrick
High Temperature Thermal Insulation

Trade Names:

K-25HS, K-25XHS, K-26S, K-26SE, K-26HS, K-26LI, K-28, K-28S, K-30, K-30S, K-3000, K-3000S;

Firebrick 80, 80D, 80DZ; IFB Dust

Manufacturer/Supplier:

THERMAL CERAMICS INC. P.O. BOX 923; DEPT. 300 AUGUSTA, GA 30903-0923

Product Stewardship Program: 800-722-5681 / FAX: 706-560-4053 For additional MSDS's, call our automated FAXBACK: 800-329-7444

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

| INGREDIENT<br>Cas Number          | PERCENT   | OSHA PEL                                       | ACGIH TLV               |
|-----------------------------------|-----------|------------------------------------------------|-------------------------|
| Crystalline silica - quartz       |           |                                                |                         |
| 14808-60-7                        | Up to 0.3 | 0.1 mg/m³ (respirable)                         | 0.1 mg/m³ (respirable)  |
| Crystalline silica - cristobalite |           |                                                |                         |
| 144 <b>64-46</b> -1               | 0.5 - 21  | 0.05 mg/m³ (respirable)                        | 0.05 mg/m³ (respirable) |
| Ferric oxide                      |           |                                                |                         |
| 1309-37-1                         | 0.3 - 1.5 | 10 mg/m³                                       | 5 mg/m³                 |
| Titanium dioxide                  |           |                                                |                         |
| 13463-67-7                        | 1.0 - 2.0 | 15 mg/m³                                       | 10 mg/m³                |
| Calcium oxide                     |           |                                                |                         |
| 1305-78-8                         | 0.1 - 1.0 | 5 mg/m³                                        | 2 mg/m³                 |
| Alumina                           |           |                                                |                         |
| 1344 <b>-</b> 28-1                | 40 - 70   | 15 mg/m³ (total); 5 mg/m³ (respirable)         | 10 mg/m³                |
| Silica, amorphous                 |           |                                                | _                       |
| 7631-86-9                         | 35 - 60   | (80 mg/m³ + % SiO <sub>2</sub> **) or 20 mppcf | 10 mg/m³                |

NOTES:

"% SiO<sub>2</sub> = percent of crystalline silica

(See Section 8 for Personal Protection Guidelines.)

MSDS No: 151-

151-2

Date Prepared:

03/28/1995

Revised/Reviewed: 06/01/1998

## PRODUCT SAFETY INFORMATION

# CRYSTALLINE SILICA CONTAINING PRODUCT (Quartz CAS #14808-60-7 And/Or Cristobalite CAS #14464-46-1)

#### WARNING:

- This product contains crystalline silica, which has been identified by the International Agency for Research on Cancer (fARC) as a known carcinogen to humans.
- This product contains crystalline silica, a chemical known to the State of California to cause cancer.

#### Avoid breathing particulates and dust

#### RISKS:

- Cancer hazard by inhalation.
- May cause silicosis (lung disease) by inhalation.
- · May cause temporary irritation to eyes, skin and respiratory tract.

#### PRECAUTIONARY MEASURES:

- Minimize airborne particulates and dust with engineering controls.
- Wear a NIOSH certified respirator.
- · Wear long sleeved, loose-fitting clothing, eye protection, and gloves.
- · Wash work clothing separately and rinse washing machine after use.

#### TIRST AID MEASURES:

Eves:

Flush with Water.

Skin:

Wash with soap and warm water.

Ingestion:

Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop.

Inhalation:

Remove to fresh clean air.

If any of the above irritations persists, seek medical attention immediately.

FOR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES, REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS).

THERMAL CERAMICS INC. P.O. BOX 923 DEPT. 300 AUGUSTA, GA 30903-0923 (800) 722-5681



Canadian WHMIS Class D-2A: Material causing other toxic effects.

cabel No:

2-0895 (Rev. 05/98)

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

...Section 302: Extremely Hazardous Substances

...Section 304: Emergency Release ...Section 311: MSDS/List of Chemicals

...Section 312: Emergency and Hazardous Inventory ...Section 313: Toxic Chemicals Release Reporting

STEL: Short-Term Exposure Limit

TCLP: Toxicity Characteristics Leaching Procedures (EPA)

TLV: Threshold Limit Values (ACGIH)
TSCA: Toxic Substance Control Act

WHMIS: Workplace Hazardous Materials Information System (Canada)

29 CFR 1910.134 & 1926.103: OSHA Respiratory Protection Standard
29 CFR 1910.1200 & 1926.59: OSHA Hazard Communications Standard

Revisions: Replaces revision 03/23/98. Revised Respiratory Protection in Section 8 with updated information.

Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.

MSDS No: 03/28/1995 Revised/Reviewed: 06/01/1998 151-2 Date Prepared:

Listed as "Silica, crystalline (airborne particles of respirable size)" Proposition 65, The Safe forniaاليہ

Drinking Water and Toxic Enforcement Act of 1986: Known to the State of California to cause

cancer.

Other States Crystalline silica products are not known to be regulated by states other than California;

however, state and local OSHA and EPA regulations may apply to these products. Contact

your local agency if in doubt.

#### international Regulations

Tanadian WHMIS:

Class D-2A Materials Causing Other Toxic Effects

∴ar adian EPA:

All substances in this product are listed, as required, on the Domestic Substance List (DSL).

## 16 OTHER INFORMATION ...

#### Precautionary Measures to be Taken After Service and Upon Removal:

Amorphous silica may transform to crystalline silica when subjected to temperatures exceeding 1800° F. Therefore, the content of crystalline silica may be higher than originally stated in Section 2. Users should observe good industrial hygiene and work practices to reduce employees' exposure when handling after service products.

#### HMIS Hazard Rating:

1\* HMIS Acute Health: HMIS Flammable: 0

HMIS Reactivity: 0

To be supplied by user depending upon use

se Section 3 of the MSDS for possible chronic health effects.

#### SARA Title III Hazard Categories:

Acute Health:

Yes

Pressure Hazard:

Νo

Chronic Health:

Yes

Reactivity Hazard:

No

Fire Hazard:

MMIS Personal Protective:

Nο

#### Definitions:

ACGIH:

American Conference of Governmental Industrial Hygienists

CAS:

Chemical Abstracts Service Registry Number

EPA:

Environmental Protection Agency

f/cc:

Fibers per cubic centimeter

HEPA:

High Efficiency Particulate Air

HMIS:

Hazardous Materials Identification System

mg/m3:

Milligrams per cubic meter of air

mppcf:

Million particles per cubic meter

MSHA:

Mine Safety and Health Administration

NFPA:

National Fire Protection Association

NIOSH:

National Institute for Occupational Safety and Health

OSHA:

Occupational Safety and Health Administration

RCRA:

Resource Conservation and Recovery Act

SARA:

Superfund Amendments and Reauthorization Act

Title III:

Emergency Planning and Community Right to Know Act

Page 6 Of 8

MSDS No:

151-2

Date Prepared:

03/28/1995

Revised/Reviewed: 06/01/1998

cristobalite is carcinogenic to humans (Group 1) [IARC Monograph; Vol. 68; June 1997]. However, in reaching its conclusion, IARC stated that the carcinogenicity in humans could not be found in all industries reviewed and that carcinogenicity might be dependent on inherent characteristics of crystalline silica or on external factors affecting biological activity (e.g., cigarette smoking) or distribution of its polymorphs.

Toxicology:

Crystalline silica

There is sufficient evidence of carcinogenicity of respirable silica in experimental animals (IARC Monograph; Vol. 42; 1987 and IARC Monograph; Vol. 68; 1997). Inhalation and intratracheal installation of crystalline silica in rats caused lung cancer; however, studies in other species such as mice and hamsters caused no lung cancer. Crystalline silica also caused fibrosis in rats and hamsters in several inhalation and intratracheal installation studies

## 12. ECOLOGICAL INFORMATION

Adverse effects of this material on the environment are not anticipated.

#### 13. DISPOSAL INFORMATION

Waste Management:

To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA:

If discarded in its purchased form, this product would not be a hazardous waste either by tisting or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

United Nations (UN) Number:

North America (NA) Number:

## TRANSPORT INFORMATION

Department of Transportation (D.O.T.):

Hazard Class:

Not regulated

Labels:

Not applicable

Placards:

Not applicable

Bill of Lading:

Product name

## REGULATORY INFORMATION

#### United States Regulations

SARA Title III:

This product does not contain any substances reportable under Sections 302, 304, 313 (40

CFR 372). Sections 311 and 312 apply.

OSHA.

Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication

Standard.

TSCA:

All substances contained in this product are listed in the TSCA Chemical Inventory [Section

3(b)

PROCESSOR OF THE PARTY

Not applicable

Not applicable

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

#### Recommended Respiratory Protection When Handling Crystalline Silica Products

#### AS PRODUCED AND AFTER SERVICE

**INCENTRATION** RESPIRATOR

. Disposable particulate respirator (N, R, or P, 95 rated) or half o to PEL 

mask air purifying respirator with high efficiency (P100) filter

cartridges.

to 10 umes PEL 

particulate air (HEPA) or P100 rated filter cartridges.

10 to 50 times PEL. ..... Full facepiece air-purifying respirator with HEPA or P100 rated

filter cartridges or powered air-purifying respirator (PAPR) with

HEPA or P100 rated filter cartridges.

o0 ames PEL . . . . . . . . . . . . . . . . . . Full facepiece positive pressure supplied air respirator.

DTE. For unknown exposures or when working with other contaminants, consult an industrial hygienist for air monitoring and spirator selection.

rotactive Clothing:

Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use, if you take work clothing home, it is recommended you vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

Goggles/safety glasses with sideshields should be worn. Protection.

## 9... PHYSICAL AND CHEMICAL PROPERTIES.

op∈arance

Solid brick or block

hemical Family: aper Pressure:

**Aluminosilicates** Not applicable

buing Point:

Not applicable 3190°F to 3350°F

elting Point: √ater Solubility (%):

Not soluble in water

Vapor Density:

Specific Gravity Range:

Not applicable 0.77 - 2.4

Volatile by Volume (%):

Not applicable

pH:

Not applicable

#### 10. STABILITY AND REACTIVITY

azardous Polymerization.

Will not occur

nemical Incompatibilities:

Powerful oxidizers; fluorine, manganese trioxide, oxygen disulfide

sazardous Decomposition Products:

None

## 11. TOXICOLOGICAL INFORMATION

rpidemiology:

Crystalline silica

Results of several epidemiology studies have indicated that diseases which may be caused by the uncontrolled inhalation of crystalline silica include silicosis, pulmonary tuberculosis or industrial bronchitis. In evaluating crystalline silica as a cancer risk, the International Agency for Research on Cancer (IARC) reviewed several studies from different industries and concluded that crystailine silica from occupational sources inhaled in the form of quartz or

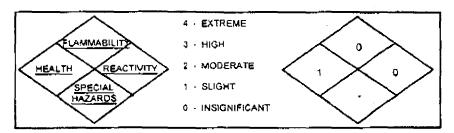
Page 4 Of 8

## MATERIAL SAFETY DATA SHEET

4004

MSDS No: 151-2 Date Prepared: 03/28/1995 Revised/Reviewed: 06/01/1998

## 5. FIRE FIGHTING MEASURES



NFPA Unusual Hazards:

None

Flash Point:

Non-combustible

Extinguishing Media:

Use extinguishing media appropriate to the surrounding fire.

Explosion Hazards:

None

Protective Equipment:

Wear NIOSH approved respirator together with other protective gear appropriate to the

surrounding fire.

#### 6: ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures:

Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. <u>Do not use compressed air for clean-up</u>. Personnel should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could result in water pollution.

## 7. HANDLING AND STORAGE

Handling:

Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. <u>Do not use compressed air for clean-up</u>.

Storage:

This product is stable under all conditions of storage. Store in original factory container in a

dry area. Keep container closed when not in use.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use engineering controls such as ventilation and dust collection devices to reduce airborne particulate concentrations to the lowest attainable level.

Respiratory Protection:

When it is not possible or feasible to reduce airborne crystalline silica or particulate levels below the PEL through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne crystalline silica and/or dust concentrations using appropriate NIOSH analytical methods and select the respiratory protection based upon the results of that monitoring, 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH certified respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

MSDS No: 151-2

Date Prepared:

03/28/1995

Revised/Reviewed:

06/01/1998

## 3. HAZARDS IDENTIFICATION

#### **EMERGENCY OVERVIEW**

#### \*\* WARNING \*\*

Cancer hazard by inhalation. [SEE BELOW]

Dust from this product may aggravate existing chronic lung conditions such as bronchitis, emphysema and asthma.

ossible Health Effects

arget Organs:

Eyes, skin, and respiratory system.

imary Entry Route:

Inhalation

cute effects:

Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to

the skin on prolonged contact.

inronic effects:

Prolonged/repeated inhalation of respirable crystalline silica may cause delayed lung injury

(silicosis). [See Section 11 of this MSDS for more information.]

razard Classification:

The Seventh Annual Report on Carcinogens (1994), prepared by the National Toxicology

Program (NTP), classified silica, crystalline (respirable size), as a substance which may

reasonably be anticipated to be a carcinogen.

The International Agency for Research on Cancer (IARC) has classified crystalline silica inhaled in the form of quartz or cristobalite from occupational sources as carcinogenic to humans (Group 1). This IARC Classification was based on a relatively large number of epidemiological studies that together provide sufficient evidence in humans for the

carcinogenicity of inhaled crystalline silica.

The State of California, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "silica, crystalline (airborne particles of respirable size)"

as a material known to the State of California to cause cancer.

igns and Symptoms of Overexposure:

ye Contact:

Physical irritation, laceration.

-ki∩ Contact;

Physical irritation.

agestion

May cause temporary irritation to the gastrointestinal tract.

the ation:

Decline in pulmonary function and abnormal chest x-ray.

#### 4. FIRST AID MEASURES

ye Contact:

Flush with large amounts of water for at least 15 minutes. Do not rub eyes.

skin Contact:

Wash affected area gently with soap and water. Skin cream or lotion after washing may be

helpful.

ngestion.

Do not induce vomiting; drink plenty of water.

ihalation: Remove affected person to clean fresh air.

\*\* If any of the symptoms persist, seek medical attention immediately.

Page 2 Of 8

THE RESIDENCE OF THE PROPERTY OF THE PARTY O

716-831-8687

Kiln 3 Danuary: 1999

Skamol

# MATERIAL SAFETY DATA SHEET HIPOROS, MOLER INSULATING BRICK

#### 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

| MANUFACTURER:                                                                                                           | EMERGENCY TELEPHONE:                                                                                |  |  |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--|--|
| Skamol a/s<br>Skamol Insulation<br>Østergade 58-60<br>DK-7900 Nykøbing Mors<br>Denmark<br>Telephone: 011 45 97 72 15 33 | United States: Phone: (716) 831-8682 Fax: (716) 831-8687 See Section 16 for address of U.S. contact |  |  |
| TRADE NAME: HIPOROS, Moler Insulating Brick                                                                             | SYNONYMS:                                                                                           |  |  |
| CHEMICAL NAME:                                                                                                          | Moler insulating bricks                                                                             |  |  |
| Mixture of natural and synthetic minerals and silicates                                                                 |                                                                                                     |  |  |
| PREPARED BY:                                                                                                            | DATE OF ISSUE/REVISION:                                                                             |  |  |
| Clayton Environmental Consultants, inc.                                                                                 | 9 August 1996                                                                                       |  |  |

#### 2. INGREDIENTS

人,令人大力力

| Component                                    | CAS Number(s)                                      | Percent       | ACGIH<br>TLV | OSHA<br>PEL         | Unita          |
|----------------------------------------------|----------------------------------------------------|---------------|--------------|---------------------|----------------|
| Natural and synthetic minerals and silicates | 1317-80-8<br>68476-25-5<br>7778-18-9<br>14483-19-3 | 96.8          | 10*          | 15*                 | mg/m³          |
| Quartz                                       | 14808-60-7                                         | 3.2           | 0.1**        | 10<br>%Quartz+2     | ₩ <b>0</b> /₩3 |
|                                              | * Total dust                                       | ** Respirable | quartz       | *** Respirable dust |                |

The ACGIH TLV and OSHA PEL listed for natural and synthetic minerals and silicates are the 1995-1996 TLV for "particulates, not otherwise classified" and the 1995 OSHA PEL for "particulates not otherwise regulated." The OSHA PEL for respirable quartz is calculated from the percentage of quartz in the respirable dust. The TLV and PELs listed are 8-hour time-weighted average exposure limits.

#### 3. HAZARDS IDENTIFICATION

#### **EMERGENCY OVERVIEW**

The product is porous, plak bricks having no odor. Dusts may cause tritation of the eyes, skin, mucous membranes, and respiratory tract. The product contains small amounts of crystalline silica (quartz), which has been identified as a potential carcinogen. Use appropriate personal protective equipment. Keep unnecessary personnel out of the area when working with the product or during cleanups.

Skamol a/s

MSDS for HIPOROS Moter Insulating Brick, 9 August 1996

Page 1 of 6

JAN 7 '98 08:04

716 831 8687

PAGE.002

#### 3. HAZARDS IDENTIFICATION (Continued)

#### POTENTIAL HEALTH EFFECTS:

Eve Contact: Dusis may cause initation.

Skin Contact: Dusts may cause initation.

Skin Absorption: Not known to be absorbed through intact skin.

inhaiation: Dusts may cause respiratory tract and mucous membrane irritation. Inhaiation of quartz can cause lung demage (silicosis and possibly cancer).

Acute silicosis can result from extremely high exposures to crystalline allica dust, particularly when the particle sizes are small. Acute silicosis is rapidly progressive with diffuse pulmonary involvement rather than the localized, nodular involvement seen in classical silicosis. Acute silicosis may develop only months after the initial exposure, and has been reported to cause death in as little as 1 to 2 years.

ingestion: Not expected to be an important route of entry into the body. Ingestion of large amounts of the product may cause initiation of the mouth, esophagus, and stomach.

#### CHRONIC AND CARCINOGENIC HEALTH EFFECTS:

Dusts generated in working with this product are slightly acidic. Prolonged contact with dusts from this product may cause dermatitis.

Chronic inhalation of quariz-containing dusts can cause lung disease, including simple silicosis, conglomerate silicosis or progressive massive fibrosis, chronic bronchitis and emphysema, and possible interaction with coexisting active or dormant tuberculosis. The intensity and duration of exposure to airborne quariz-containing dusts are major factors influencing the risk of developing lung disease.

tARC has determined that quartz is probably carcinogenic to humans, based on limited evidence in humans and sufficient evidence in experimental animals. NTP indicates that quartz is reasonably anticipated to be a carcinogen, also based on limited evidence in humans and sufficient evidence of carcinogenicity in experimental animals.

Pre-existing lung and skin conditions possibly may be aggravated by prolonged exposure to high concentrations of the product.

#### 4. FIRST AID MEASURES

Inhalation: Remove exposed person to fresh air. If breathing is difficult, oxygen may be administered. If breathing has stopped, artificial respiration should be started immediately. Seek medical attention.

Eyes: Flush with tepid water for at least 20 minutes while holding the eyelids wide open. Seek medical attention if imitation develops.

Skin: Wash thoroughly with mild scap and water. Seek medical attention if irritation develops. Launder contaminated clothing before reuse.

Skamal als

MSDS for HIPOROS Moler Insulating Brick, 9 August 1996

Page 2 of 6

appenigestation (i)

وموفر الأوفران الماء

#### 4. FIRST AID MEASURES (Continued)

ingestion: Not expected to be an important route of entry into the body. If large amounts of the product are ingested, seek medical attention.

#### FIRE FIGHTING MEASURES

FLASH POINT: None

LEL: None

**UEL:** None

**AUTOIGNITION TEMPERATURE: None** 

Product will not burn in sir. Use fire lighting methods suitable for other materials present in the surrounding fire.

A self-contained breathing apparatus operating in positive pressure mode and full fire fighting gear should be worn for combating fires.

#### 6. ACCIDENTAL RELEASE MEASURES

Pick up released product using appropriate implements and place in original containers if reusable. If not reusable, place in appropriate containers for disposal. Appropriate personal protective equipment cited in Section 8 should be worn during cleanup operations. Although the product itself is not hazardous to the environment, material collected during cleanup may be contaminated with hazardous materials. If there is a potential for contamination, material collected during cleanup should be treated as hazardous until specific testing, including TCLP, shows the material to be non-hazardous.

#### 7. HANDLING AND STORAGE

Wear appropriate protective equipment cited in Section 5 during handling. Good housekeeping practices should be employed to prevent generation and accumulation of dusts.

After handling product, wash face and hands before eating, drinking, or smoking,

#### 8. EXPOSURE CONTROL - PERSONAL PROTECTION

ENGINEERING CONTROLS: Local exhaust ventilation should be provided as needed to maintain exposures below the limits cited in Section 2. Design details for local exhaust ventilation systems can be found in the most recent edition of *Industrial Ventilation - A Manual of Recommended Practice*, published by the American Conference of Governmental Industrial Hygienists, P.O. Box 18153, Lansing, MI 48910. The need for local exhaust ventilation should be evaluated by a professional Industrial hygienist. Local exhaust systems should be designed by a professional engineer.

RESPIRATORY PROTECTION: If exposures may exceed the limits cited in Section 2, use, as a minimum, a NIOSH-approved half-facepiece respirator with cartridges approved for particulates having an exposure limit of not less than 0.05 mg/m3. If exposures may exceed 10 times the limits cited in Section 2, consult respiratory protective equipment suppliers or a professional industrial hygienist for assistance in selection of proper respiratory protective equipment. The evaluation of a need for respiratory protective equipment should be made by a professional industrial hygienist. Employees who use respiratory

Skamal a/s

MSDS for IIIPOROS Moler Insulating Brick, 9 August 1996

Page 3 of 6

### 8. EXPOSURE CONTROL - PERSONAL PROTECTION (Continued)

RESPIRATORY PROTECTION (Continued):

protection must be included in a respiratory protection program that conforms to the requirements of OSHA standards or corresponding state laws and regulations.

EYE PROTECTION: Safety glasses with side shields should be worn when working with this product. Goggles should be worn while the product is being sawed or ground. Do not wear contact lenses when working with this product.

**8KIN PROTECTION:** Use of protective gloves is recommended to prevent possible irritation while working with this material. Leather gloves or polymeric materials such as polyvinyl chloride are suggested to minimize contact with dust from the product. A polymer-coated apron is recommended where there is a possibility that work clothing may become heavily contaminated with dust from working with this product. Soiled work clothing and personal protective equipment should be thoroughly cleaned before reuse.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND PHYSICAL STATE: Pink, porous solid

VAPOR DENSITY (AIR=1): Not applicable

VAPOR PRESSURE: Not applicable

ODOR: None

% VOLATILES BY VOLUME: Not volatile

% SOLUBILITY IN WATER: Insoluble

MELTING POINT: 2,480

2,460 to 2,550°F 1,350 to 1,400°C

OCTANOLWATER PARTITION COEFFICIENT: Not applicable

**EVAPORATION RATE:** Not applicable

SPECIFIC GRAVITY/BULK

DENSITY: Bulk density 35 lbs/cu.ft. (570 kg/m3)

**BOILING POINT:** Not determined

pH: (In mixture with water) 8.0

#### 10. STABILITY AND REACTIVITY

STABILITY (CONDITIONS TO AVOID): None known

INCOMPATIBILITIES: No known chemical Incompatibilities.

HAZARDOUS DECOMPOSITION PRODUCTS: None known. Product is stable at service temperatures up to 1,650°F (900°C).

HAZARDOUS POLYMERIZATION: Will not occur.

#### 11. TOXICOLOGICAL INFORMATION

Quartz has been shown to cause lung cancer in test animals. In rats, chronic inhalation and tracheal instillation studies have indicated significant increases in incidences of adenocarcinomas and squamous cell carcinomas of the lung. Human evidence is less clear, because of the presence of potentially confounding factors (such as smoking or concomitant exposure to carcinogenic metals and organic compounds) in the majority of epidemiological studies.

The International Agency for Research on Cancer (IARC) in Monograph 42, Silica and Some Silicates, 39-143 (1987) cites a number of epidemiological studies that indicate an increased risk of developing lung cancer among workers who are exposed to respirable crystalline silica. The majority of the cited studies did

Skainol a/s

MSDS for HIPOROS Moler Insulating Brick, 9 August 1996

Page 4 of 6

JAN 7'98 08:24

214516596699

- whiteou

716 831 8687

PAGE.003

### 11. TOXICOLOGICAL INFORMATION (Continued)

not take into account confounding factors such as smoking and other chemical exposures.

The JARC cites animal studies in which inhalation of respirable crystalline silica or intratracheal instillation produced edenocarcinomes and squamous-cell carcinomas in rats. A similar response was not elicited from hamsters.

Similar evidence for the carcinogenicity of respirable crystalline silica is cited by the National Toxicology Program (NTP) in its Sixth Annual Report on Carcinogens, 1991 Summary.

#### 12. ECOLOGICAL INFORMATION

Detailed studies on the environmental fate of the product have not been conducted. However, it is not expected that the product would present a hazard to aquatic and terrestrial flora and fauna.

#### 13. DISPOSAL CONSIDERATIONS

This product is not classified as a hazardous waste under current EPA regulations. Disposal at an EPA-approved landfill is recommended. If product may be contaminated with other materials, testing, including TCLP, should be performed to determine the hazard characteristics. It is the user's responsibility to dispose of all wastes in accordance with local, state, and federal regulations.

Empty containers may have residues from the product. Observe proper safety and handling precautions for product containers.

#### 14. Transportation information

**DOT Classification:** Not regulated

#### 15. REGULATORY INFORMATION

Quartz is listed in the State of Massachusetts as an Extraordinarily Hazardous Substance and carcinogen, when present in dust-producing material, but is exempt if particulates are not present and cannot be substantially generated through use of the product. Crystalline silica whose particle size is in the respirable range has been listed by the State of California as a compound known to cause cancer.

The product is not regulated under SARA Title III, Section 313. It may be reportable under SARA Title III, Sections 311 and 312.

OSHA Hazard Communication Categories: Initant, Skin Hazard, Lung Hazard, Carcinogen

SARA Hazard Categories: Acute hazard, Chronic Hazard

TSCA Status: All known constituents except the following are listed in the TSCA Inventory of Chemical Substances:

Diopside (CAS No. 14483-19-3) is present in trace amounts.

Skomol a/s

MSDS for HIPOROS Motor Insulating Brick, 9 August 1996

Page 5 of 6

elitera de la comparte

4.646

#### 15. REGULATORY INFORMATION (Continued)

WHMIS Classification: Not a controlled product under current WHMIS regulations. As a manufactured article, this product currently is exempt.

#### 16. OTHER INFORMATION

U.S. CONTACT:

Skamol, Inc.

6010 North Bailey, Sulte 1 Amherst, NY 14226, Tel: (716) 831-8682 Fax: (716) 831-8687

IMPORTANT SAFETY NOTICE: The information in the Material Safety Data Sheet relates only to the specific material described herein and does not relate to use in combination with any other material or substance or in any process. We believe that the information contained herein is current as of the date of issue of this Material Safety Data Sheet. Because the use of this information and the conditions of use of this product are not within the control of Skamol a/s and Skamol, Inc., it is the user's obligation to determine the conditions of safe use of this product.

Users of this product should study this Material Safety Data Sheet and become aware of the product hazards and safety information <u>before</u> using the product. Users should also notify their employees, agents, and contractors regarding information contained in this Material Safety Data Sheet and any product hazards and safety information in order to provide for safe use of this product.



Manufacturer: Skamol e/s · Østergade 58-60 · DK-7900 Nykebing Mors · Tel. +45 97 72 15 33 · Fax +45 97 72 49 75 · e-mail: insulation@skamol.dk Subsidiaries: Technotherm GmbH & Co. KG. · Postlech 10 14 37 · D-41414 Neuss · Tel. +49 2131 10 64 0 · Fax +49 2131 10 64 64 Skamol e/s, UK Sales Office · Aden Mount · Thorrington · Essex CO7 8JJ · Tel. +44 (1206) 302 330 · Fax +44 (1208) 304 576 Skamol, Inc. · 8010 North Balley · Suite 1 · Amherst · New York 14226 · Tel. +1 (716) 631-8662 · Fax +1 (716) 831-8687

Skampl a/s is certified under DS/ISO 9001

Skamol a/s

MSDS for HIPOROS Moler Insulating Brick, 9 August 1996

Page 6 of 6

JAN 7'98 08:05

manage with highligh

1000000

716 831 8687

PAGE.004

Kih3 January 1999.

appear topocents in resolutions of the billion

#### 9/21/92 MATERIAL SAFETY DATA SHEET

#### A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 TELEPHONE NUMBER -- 314-473-3626

SECTION I

PRODUCT NAME:

INSWOOL BLANKET INSWOOL-M BLANKET\* INSWOOL-HP BULK\*
INSWOOL-HP BLANKET INSWOOL-HP-M BLANKET\* INSWOOL-HP-M BULK\*
INSWOOL-HT BLANKET INSWOOL-HT-M BLANKET\* INSWOOL-ET BULK
INSWOOL-LT BLANKET\* INSWOOL-BULK\*
INSWOOL-LT-M BLANKET\* INSWOOL-M BULK\*
INSWOOL-LT-M BLANKET\* INSWOOL-M BULK\* INSWOOL-LT-M BULK\*

PRODUCT TYPE:

Refractory Fiber

FORMULA:

Not Applicable

CHEMICAL FAMILY:

NFPA RATING:

Refractory

Not Regulated

\* Made in the Republic of Mexico.

DOT NO:

#### SECTION II PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL

TLV-TWA

CAS #

1-0-0

Refractory Fiber (Al<sub>2</sub>O<sub>3</sub> - SiO<sub>2</sub> Glass) 100%

2 fibers/cc

142844-00-6

A. P. Green workplace exposure guideline. See also Section IX.

Note: International Agency for Research on Cancer (IARC) has classified ceramic fiber as 2B - Possibly carcinogenic to humans.

> SECTION III PHYSICAL DATA

BOLUBILITY IN WATER:

VOLATILES BY VOLUME (%): Nil

SPECIFIC GRAVITY:

2.5-3.0

MELTING POINT: Not Applicable

APPEARANCE AND COOR:

White to off-white fiber, no odor, in blanket or bulk form.

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:

None

EXTINGUISHING MEDIA:

Not combustible.

SPECIAL FIRE FIGHTING PROCEDURES:

None

UMUSUAL FIRE AND EXPLOSION HAZARDS:

None known.

SECTION V HEALTH HAZARD DATA

EFFECT OF OVEREXPOSURE:

EYES:

ACUTE: Causes mechanical irritation.

CHRONIC: None Known.

SKIN:

ACUTE: May cause skin irritation.

CHRONIC: None Known.

INHALATION:

ACUTE: May cause upper respiratory irritation.

CHRONIC: May cause lung damage. There have been animal studies that have shown refractory

fiber to cause cancer of the pleura in animals.

INGRETION:

ACUTE: Unknown.

CHRONIC: Unknown.

EMERGENCY AND FIRST AID PROCEDURES:

EYES:

Immediately flush eyes with water for 15 minutes. If irritation occurs, consult

physician.

SKIN:

Wash skin with water followed with soap and water. If irritation occurs, consult

physician.

INHALATION:

Remove to fresh air. Seek medical attention.

INCRSTICE:

Contact physician immediately. Do not induce vomiting unless instructed to do so by a

physician.

Material Safety Data Sheet

Product: INSWOL BLANKETS & INSWOL BULK
, TAYA | CHICAGO GET PERCENT TO 12

REACTIVITY DATA

STABILITY:

Stable

· 操作 法经济的

INCOMPATIBILITY:

Hydrofluoric acid and strong alkalis.

HAZARDOUS POLYMERIZATION:

Will not occur.

SPILL OR LEAK PROCEDURES

19602

STEPS TO BE TAKES IN CASE MATERIAL IS RELEASED OR SPILLED: Dampen, then scoop up and place in a container for disposal.

WASTE DISPOSAL METEOD: To landfill, in accordance with local, state and federal regulations.

SPECIAL PROTECTION INFORMATION

RESPIRATORY FROTECTION: A NIOSH approved respirator for mineral dusts should be used at all times when working with this product. If material has been exposed to elevated temperatures above (1800°F (982°C), a NIOSH approved respirator for use with crystalline silica should be used. (See Section IX.) Employees using a respirator must be fit tested, using OSHA qualitative fit testing requirements.

VENTILATION: General mechanical ventilation is usually adequate.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn. Contact lenses should not be worn while handling this material.

CTHER PROTECTION: Use of leather gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from skin contact. Work clothing should be washed separately. Rinse washing machine thoroughly after use.

#### SECTION IX SPECIAL PRECAUTIONS

WARNING: This product as supplied does not contain cristobalite; however, avoid breathing refractory dust during tear-out of this refractory after it has been in service. When exposed to temperatures above 1800°F (982°C), a large percentage of this material turns to cristobalite. A NIOSH approved respirator for use with crystalline silica should be used. See the NIOSH Certified Equipment list for the correct type for the dust level you encounter.

The permissible exposure limits for cristobalite, CAS #14464-46-1, are:

ACGIH OSHA

TIV-TWA
0.05 mg/m<sup>3</sup>

Respirable Dust

SiO<sub>2</sub> + 2

Respirable

(Note: OSHA has proposed a new PEL of 0.05 mg/m3 respirable dust, the same as ACGIR.)

WARNING: Cristobalite is crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumocomiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Its study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

WARNING: Employees should not be allowed to smoke in any area where caramic fibers are being installed or removed. During removal or repair, the material being removed or the area repaired should be sprayed with water--preferably water containing a wetting agent (detergent)--to suppress dusting. Dust collection apparatus should be used.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392

Kilh-3 January 1999

# MATERIAL-SAFETY DATA SHEET



WARNING LABEL: SI

SILICA

TELEPHONE: (412) 562-6200 TELETYPE: 710-664-4347

03/19/85

#### DISCLAIMER

This data sheet is based on OSHA FORM 20 but medified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an occumodation to the buyer.

| The second secon |                                                                                                                                            |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| SECTION I - PRODUCT IDENTIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                            |  |  |  |  |  |  |
| Product Tradename:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Type of Refractory:*                                                                                                                       |  |  |  |  |  |  |
| KALA 🥍                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Type of Refractory:*  High Alumina Brick                                                                                                   |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | dicate appreximate percentage, and check applicable bleck. ominantly of the mineral chromite (MgFe).0.(AlFeCr) <sub>2</sub> O <sub>3</sub> |  |  |  |  |  |  |

| SECTION II - HAZARDOUS INGREDIENTS |                       |               |                     |                                    |                       |                               |
|------------------------------------|-----------------------|---------------|---------------------|------------------------------------|-----------------------|-------------------------------|
| EE CHECKED BLOCKS<br>INGREDIENT    | GEN. CHEM.<br>FORMULA | C.A.S. NUMBER | PERCENTAGE<br>RANGE | OSHA P.E.L.                        | ACGIH TLVO            | NIOSH CRITERIA<br>DOCUMENT NO |
| □ Quartx                           | sio <sub>2</sub>      | 001317799     |                     | 10 mg/m³<br>% Respirable Quartz +2 | SAME                  | 75-120                        |
| ú Cristobalite                     | SIO <sub>2</sub>      | 14464-46-1    | 3 - 5%              | 1/2 Quartz Value                   | SAME                  | _ 75-120                      |
| □ Tridymite                        | sio <sub>2</sub>      | 15468-32-3    |                     | ½ Quartz Value                     | SAME                  | 75-120                        |
| □ Fused Silica                     | sio <sub>2</sub>      | 007631869     |                     | NONE                               | Use Quartz TLV        | 75-120                        |
| Coal Tar Products                  | N/A                   | MX8001589     |                     | 0.2 mg/m <sup>3</sup>              | SAME                  | 78-107                        |
| □ Petroleum Pitch                  | N/A                   | MX8052424     |                     | NONE                               | 5.0 mg/m <sup>3</sup> | 78-106                        |
| □ Phosphoric Acid                  | ную,                  | 007664382     |                     | 1.0 mg/m <sup>3</sup> (mist)       | SAME                  | NONE                          |
| ⊒ <b>Lime</b> :                    | CeO                   | 001305788     |                     | 5.0 mg/m <sup>3</sup>              | 2.0 mg/m <sup>3</sup> | NONE                          |
| □ Sodium Silicate                  | 03-Si .2Na            | 006834920     |                     | NONE                               | NONE                  | NONE                          |
|                                    |                       |               |                     |                                    |                       |                               |
|                                    |                       |               |                     |                                    |                       |                               |
|                                    |                       | }             |                     |                                    |                       |                               |

|                                                         | SECTION III - PHYSICAL DATA |  |
|---------------------------------------------------------|-----------------------------|--|
| Appearance and Odor:  Specific Gravity: 2               | Dark buff color; no odor.   |  |
| Solubility in Water:<br>Soluble Constituents:<br>Other: | Insoluble.                  |  |

| _ | SECTION IV - FIRE AND EXPLOSION DATA                   |  |
|---|--------------------------------------------------------|--|
| Γ | UNLESS OTHERWISE NOTED, NONE. Product is a refractory. |  |
|   | NOTES:                                                 |  |
| l |                                                        |  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SECTION V - HEALTI                                                                                                                                                                                                                                                                            | H HAZARD DATA*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| *SEE CHECKED BLOCKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   | E REQUIRED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| INGREDIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | EFFECTS OF                                                                                                                                                                                                                                                                                    | OVEREXPOSURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PROLONGED                                                                                         | SHORT TERM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ree Crystalline Silica                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Delayed lung fibresis - silicosis                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | V                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| □ Coal Tar Products                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Skin, lung, mucous membrane carcinogen                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | V                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Skin irritation; photosensitization                                                                                                                                                                                                                                                           | <u> </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                   | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| □ Petroleum Pitch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | (Same as Coal Tar Products)                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | `                                                                                                 | ļ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| □ Lime                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Irritant to skin, eyes, muceus membranes, e                                                                                                                                                                                                                                                   | rtc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                   | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| □ Phosphoric Acid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Primary Irritant - skin, eyes, etc.                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   | √                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| □ Sodium Silicate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | liritant to skin, eyes, muceus membranes, e                                                                                                                                                                                                                                                   | itc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                   | √                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | n skin or flush from eyes using capious amou<br>Remove from skin by washing with soap and                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | me for petroleum pitch.                                                                           | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SECTION VI - RE                                                                                                                                                                                                                                                                               | ACTIVITY DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                   | <del>-</del>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| STABILITY: X STABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                               | COMMENTS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | · · · · · · · · · · · · · · · · · · ·                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Incompatability (material<br>Hazordous decemposition<br>Hazardous Polymerization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | products:                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   | e de la companya de l |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                               | ND LEAK PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| disposal procedures may disposal information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SECTION VII - SPILL A<br>may be landfilled. However, since your applica<br>vary with locale and are subject to change, y                                                                                                                                                                      | tion of this product may change its                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | chemical characteristics, a<br>al authority having jurisdi                                        | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | nay be landfilled. However, since your applica                                                                                                                                                                                                                                                | tion of this product may change its ou should consult the government                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | al authority having jurisdi                                                                       | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | nay be landfilled. However, since your applica                                                                                                                                                                                                                                                | tion of this product may change its ou should consult the government                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | al authority having jurisdi                                                                       | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | nay be landfilled. However, since your applica                                                                                                                                                                                                                                                | tion of this product may change its ou should consult the government                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | al authority having jurisdi                                                                       | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | nay be landfilled. However, since your applica<br>vary with locale and are subject to change, y                                                                                                                                                                                               | tion of this product may change its ou should consult the government                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | al authority having jurisdi                                                                       | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SECTION VIII - SPECIAL PR  ON (CHECK TYPE):   M Approved Dust  Just ventilation should be provided if routine                                                                                                                                                                                 | tion of this product may change its ou should consult the government  OTECTION INFORMATION  Description of the product of the  | al authority having jurisdi                                                                       | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust protective gloves (Chemical Protective Gloves)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  N (CHECK TYPE):  Approved Dust  sust ventilation should be provided if routine  ECK TYPE):  Acid Resistant  Improved safety glasses, geggles or faceshields should                                                                      | COTECTION INFORMATION  Other (Specify): spermeable XI Abrasion Resist                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | al authority having jurisdic                                                                      | etion for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust protective gloves (CHEYE PROTECTION: Approximation).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  N (CHECK TYPE):   Approved Dust  sust ventilation should be provided if routine  ECK TYPE):   Acid Resistant   Impred safety glasses, goggles or faceshields should  CK TYPE):   Metatarsal safety   In                                 | COTECTION INFORMATION  Other (Specify):  operation generates dust in excess permeable & Abrasien Resist uld be used when handling refrac                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | al authority having jurisdic                                                                      | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust protective gloves (Cheye Protection: Approximation of the protection of the protecti | SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  N (CHECK TYPE):   Approved Dust  sust ventilation should be provided if routine  ECK TYPE):   Acid Resistant   Impred safety glasses, goggles or faceshields should  CK TYPE):   Metatarsal safety   In                                 | COTECTION INFORMATION  Other (Specify):  operation generates dust in excess permeable & Abrasien Resist uld be used when handling refrac                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | al authority having jurisdic                                                                      | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust protective gloves (Cheye Protection: Approximation of the protection of the protecti | SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  N (CHECK TYPE):   Approved Dust  sust ventilation should be provided if routine  ECK TYPE):   Acid Resistant   Impred safety glasses, goggles or faceshields should  CK TYPE):   Metatarsal safety   In                                 | COTECTION INFORMATION  Other (Specify):  operation generates dust in excess permeable & Abrasien Resist uld be used when handling refrac                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | al authority having jurisdic                                                                      | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust protective gloves (Cheye Protection: Approximation of the protection of the protecti | SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  ON (CHECK TYPE):   Approved Dust  out ventilation should be provided if routine  SECK TYPE):   Acid Resistant   Impred safety glasses, goggles or faceshields should  CK TYPE):   Metatarsal safety   In SPECIFY):                      | COTECTION INFORMATION  Other (Specify):  operation generates dust in excess permeable & Abrasien Resist uld be used when handling refrac                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | al authority having jurisdictions of allowable limits and Deforming Other (Specifystery products. | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust protective GLOVES (CHEYE PROTECTION: Appropriately Protection (CHE PROTECTIVE CLOTHING)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  ON (CHECK TYPE):   Approved Dust  out ventilation should be provided if routine  SECK TYPE):   Acid Resistant   Impred safety glasses, goggles or faceshields should  CK TYPE):   Metatarsal safety   In SPECIFY):                      | COTECTION INFORMATION  | al authority having jurisdictions of allowable limits  ant                                        | ction for head to be a second or the second of the second or the second  |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust protective GLOVES (CHEYE PROTECTION: Appropriately Protection (CHE PROTECTIVE CLOTHING)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  N (CHECK TYPE):   Approved Dust  ust ventilation should be provided if routine  SECK TYPE):   Acid Resistant   Impred safety glasses, geggles or faceshields should  SPECIFY):  SPECIFY):  SECTION IX - SPEC | tion of this product may change its ou should consult the government ou should consult the government of the government  | al authority having jurisdictions of allowable limits ant Other (Specifystory products.           | ction for the state of the stat |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust protective gloves (Cheye protection: Approximation of the protective clothing (Cheprotective clothing)  If block is checked, p                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  N (CHECK TYPE):   Approved Dust  ust ventilation should be provided if routine  SECK TYPE):   Acid Resistant   Impred safety glasses, geggles or faceshields should  SPECIFY):  SPECIFY):  SECTION IX - SPEC | COTECTION INFORMATION  COTECTION  COTECTION INFORMATION  COTECTION  | al authority having jurisdictions of allowable limits ant Other (Specifystory products.           | tion for  head in a second second  died Theory second  in the second second second  contract second  |
| disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhaust protective gloves (Cheye protection: Approximation of the protective clothing (Cheprotective clothing)  If block is checked, p                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  SECTION VIII - SPECIAL PR  N (CHECK TYPE):   Approved Dust  ust ventilation should be provided if routine  SECK TYPE):   Acid Resistant   Impred safety glasses, geggles or faceshields should  SPECIFY):  SPECIFY):  SECTION IX - SPEC | DOTECTION INFORMATION  Other (Specify): speration generates dust in excess permeable  Discrepance of the permeable of the permea | s of allowable limits cant D Other (Specify ctory products.                                       | ction for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



TELEPHONE: 412-562-6200

| 7  | 0 | ^. | A 1 |   | ER  |
|----|---|----|-----|---|-----|
| Ų, | J | u  | ж.  | W | CK. |

11-21-88

This data sheet is based on OSHA FORM 174 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE SELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

| SECTION I - PRODUCT IDENTIFICATION |                     |  |  |  |  |
|------------------------------------|---------------------|--|--|--|--|
| Product Tradename:                 | Type of Refractory: |  |  |  |  |
| H-W LIGHTWEIGHT ES REFRACTORY      | Insulating Castable |  |  |  |  |

|                                  |                       | SECTION       | N II - HAZARDOU     | S INGREDIENTS                      |                |                               |
|----------------------------------|-----------------------|---------------|---------------------|------------------------------------|----------------|-------------------------------|
| SEE CHECKED BLOCKS<br>INGREDIENT | GEN. CHEM.<br>FORMULA | C.A.S. NUMBER | PERCENTAGE<br>RANGE | OSHA P.E.L.                        | ACGIH TLV ®    | NIOSH CRITERIA<br>DOCUMENT NO |
| © Quartz                         | SiO <sub>2</sub>      | 14808-607     | 2 - 5               | 10 mg/m³<br>% Respirable Quartz +2 | 0.1 mg/m³      | 75-120                        |
| Cristobalite .                   | \$iO <sub>2</sub>     | 14464-46-1    | 2 - 5               | 1/2 Quartz Value                   | 0.05 mg/m³     | 75-120                        |
| ☐ Tridymite                      | \$iOz                 | 15468-32-3    |                     | ½ Quartz Value                     | 0.05 mg/m³     | 75-120                        |
| ☐ Fused Silica                   | SiO2                  | 60676-86-0    | •                   | 20 mppcf                           | Use Quartz TLV | 75-120                        |
| ☐ Coal Tar Products              | N/Å                   | 65996-93-2    |                     | 0.2mg/m³                           | 0.2 mg/m³      | 78-107                        |
| Petroleum Pitch                  | N/A                   | 8052-42-4     |                     | NONE                               | 0.2 mg/m³      | 78-106                        |
| ☐ Phosphoric Acid*               | H₃PO4                 | 7664-38-2     |                     | 1.0 mg/m³ (mist)                   | 1.0 mg/m³      | NONE                          |
| □ Magnesia                       | MgO                   | 1309-48-4     |                     | 10 mg/m³                           | 10 mg/m³       | NONE                          |
| □ Free Alumina*                  | Al2O3                 | 1344-28-1     |                     | 10 mg/m³                           | 10 mg∕m³       | NONE                          |
| XI Lime                          | CaO                   | 1305-78-8     | 6 - 7               | 5.0 mg/m³                          | 2.0 mg/m³      | NONE                          |
| ☐ Chrome III Oxide*              | Cr2O3                 | 1308-38-9     |                     | 1.0 mg/m³                          | 0.5mg∕m³       | NONE                          |
|                                  |                       |               |                     |                                    |                |                               |
|                                  |                       |               |                     |                                    |                |                               |
|                                  |                       |               |                     |                                    |                |                               |

Subject to reporting under Section 313, Sara Title III

| SECTION III - PHYSICAL DATA                                 |            |
|-------------------------------------------------------------|------------|
| Appearance and Odor: Tan to gray color; earthy odor 1.20 ND | FORM:      |
| Specific Gravity: pH:                                       | —— Brick   |
| Solubility in Water: Slight Calcium Aluminate Cement        | X Granular |
| Other:                                                      | Paste      |
| <u> </u>                                                    |            |

| SECTION IV - FIRE AND EXPLOSION DATA                                     |  |
|--------------------------------------------------------------------------|--|
| UNLESS OTHERWISE NOTED, NONE Product is a refractory, and will not burn. |  |
| NOTES:                                                                   |  |

|                                                                      | SECTION V - HEALTH HAZARD DATA*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| SEE CHECKED BLOCK                                                    | <u>S</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | +                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | E REQUIRED                                     |
| INGREDIENT                                                           | EFFECTS OF OVEREXPOSURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PROLONGED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SHORT TERM                                     |
| X. Free Crystalline Silica                                           | Delayed lung fibrosis - silicosis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <i>V</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                |
| □ Coal Tar Products                                                  | Skin, lung mucous membrane carcinogen Skin irritation; photosensitization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <u> </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                |
| ☐ Petroleum Pitch                                                    | (Same as Coal Tar Products)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | V                                              |
| □ Magnesia                                                           | Irritant to skin, eyes, mucous membranes, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <del>                                     </del>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1                                              |
| <br>25 Lime                                                          | Irritant to skin, eyes, mucous membranes, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1/                                             |
| □ Free Alumina                                                       | Irritant to skin, eyes, mucous membranes, etc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                                              |
| ☐ Fused Silica                                                       | Delayed lung fibrosis-silicosis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | •                                              |
| ☐ Phosphoric Acid                                                    | Primary Irritant - skin, eyes, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1/                                             |
| □ Chrome III Oxide                                                   | Irritant to skin, eyes, mucous membranes, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1/                                             |
|                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |
|                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                |
|                                                                      | skin or flush from eyes using copious amounts of water. semove from skin by washing with soap and water. DO NOT use solvents. Sai                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | me for Petroleun                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | n Pitch.                                       |
|                                                                      | SECTION VI - REACTIVITY DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |
| Hazardous decomposition Hazardous Polymerization                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |
| jurisdiction for disposal in COMMENTS:                               | nformation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |
|                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |
|                                                                      | SECTION VIII - SPECIAL PROTECTION INFORMATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |
| EYE PROTECTION: App                                                  | CHECK TYPE):   Acid Resistant  Impermeable  R Abrasion Resistant  coved safety glasses, goggles or faceshields should be used when handling refuse  ECK TYPE):   Metatarsal safety  Impermeable  (SPECIFY):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |
|                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |
|                                                                      | SECTION IX - SPECIAL PRECAUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |
| and/or irritation to ey Do not breathe dust/f handling this product. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | volatiles may ca                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | use cancer<br>make the<br>worn while           |
| irritation of skin, eyes,<br>skin; avoid breathing                   | his resin bonded product contains free formaldehyde and phenol. Exposure to nose, and throat. Allergic skin reaction may also occur. Avoid prolonged or redust or vapor. Wash thoroughly after handling. Wear rubber gloves and approper product contains crystalline silica for which there is limited evidence of a position.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | peated contact wo<br>wed NIOSH resp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | vith eyes or<br>pirator                        |
| incidence of cancer in                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | and the state of t | angagahamah milihida Manasa Ashari a gaya sa g |
|                                                                      | विविधि शरवर्याण्य व स्वायाम् १९५५ हरू याहे कृष्ण हेताय                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 75 K T T T T T T T T T T T T T T T T T T       |
| Prepared By: C                                                       | . D. Jamison Emergenc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | y Phone: 412-5(                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 62-6437 <sup>2-1</sup> 7                       |
| MSDS/HWR 1                                                           | All the second s |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | opendix33-(                                    |

Kiln 3 January 1999

# MATERIAL SAFETY DATA SHEET



WARNING LABEL: SILICA

TELEPHONE: (412) 562-6200 TELETYPE: 710-664-4347

10/01/84

#### DISCLAIMER

This data sheet is based on OSHA FORM 20 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

| SECTION 1 - PRODUCT IDENTIFICATION                                                                                                             |                                                                                                            |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--|--|
| Product Tradename: HARWACO BOND                                                                                                                | Type of Refractory:* Sodium Silicate Bonded High Alumina Mortar                                            |  |  |
| *For chrome centaining refractories, indicate approximate Contains chrome ore consisting predominantly of the mice Contains chromium III oxide | e percentage, and check applicable block.<br>ineral chromite (MgFe).0.(AlFeCr) <sub>2</sub> O <sub>3</sub> |  |  |

| SECTION II - HAZARDOUS INGREDIENTS |                                     |               |                     |                                                |                       |                               |
|------------------------------------|-------------------------------------|---------------|---------------------|------------------------------------------------|-----------------------|-------------------------------|
| SEE CHECKED BI                     |                                     | C.A.S. NUMBER | PERCENTAGE<br>RANGE | OSHA P.E.L.                                    | ACGIH TLV®            | NIOSH CRITERIA<br>DOCUMENT NO |
| ₫ Quartz                           | SiO <sub>2</sub>                    | 001317799     | 1 - 2%              | 10 mg/m <sup>3</sup><br>% Respirable Quartz +2 | SAME                  | 75-120                        |
| ⊠ Cristobailte                     | sio <sub>2</sub>                    | 14464-46-1    | 1 - 3%              | ½ Quartz Value                                 | SAME                  | 75-120                        |
| □ Tridymite                        | SiO <sub>2</sub>                    | 15468-32-3    |                     | % Quartz Value                                 | SAME                  | 75-120                        |
| □ Fused Silica                     | sio <sub>2</sub>                    | 007631869     |                     | NONE                                           | Use Quartz TLV        | 75-120                        |
| ☐ Coal Tar Pro                     | ducts N/A                           | MX8001589     | ŀ                   | 0.2 mg/m <sup>3</sup>                          | SAME                  | 78-107                        |
| □ Petroleum Pi                     | tch N/A                             | MX8052424     |                     | NONE                                           | 5.0 mg/m <sup>3</sup> | 78-106                        |
| ☐ Phosphoric A                     | icid H <sub>3</sub> PO <sub>4</sub> | 007664382     |                     | 1.0 mg/m <sup>3</sup> (mist)                   | SAME                  | NONE                          |
| □ lime                             | CeO                                 | 001305788     |                     | 5.0 mg/m <sup>3</sup>                          | 2.0 mg/m <sup>3</sup> | NONE                          |
| ŏ Sodium Silic                     | ate 03-Si .2Na                      | 006834920     | 20 - 25%            | NONE                                           | NONE                  | NONE                          |
|                                    |                                     |               |                     |                                                |                       |                               |
| 0                                  | ĺ                                   |               |                     |                                                |                       |                               |
|                                    |                                     |               |                     |                                                |                       |                               |
|                                    |                                     | Ĭ             | ]                   | ł                                              |                       | }                             |

|                                                         | SECTION III - PHYSICAL DATA              |  |
|---------------------------------------------------------|------------------------------------------|--|
| Appearance and Odor: Specific Gravity:                  | : Gray to tan color; earthy odor.<br>.92 |  |
| Solubility in Water:<br>Soluble Constituents:<br>Other: | About 10% (dry basis) Sodium Silicate    |  |

| SECTION IV - FIRE AND EXPLOSION DATA                   |  |
|--------------------------------------------------------|--|
| UNLESS OTHERWISE NOTED, NONE. Product is a refractory. |  |
| NOTES:                                                 |  |

| ** **                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | · · · · · · · · · · · · · · · · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                     |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
|                                                                                | 23-AG 245 BIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | HAZARD DATA" 36 TO 10 A 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | TO THE PERSONS                                      |
| "SEE CHECKED BLOCKS OF                                                         | THE PERSON OF TH | OVEREXPOSLIRE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PROLONGED SHORT TE                                  |
| INGREDIENI 6332024                                                             | Control of the Contro | OVEREXPOSURE 41 /2 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PROLUNGED SHORT TE                                  |
| Free Crystalline Silica                                                        | Delayed lung fibrosis - silicosis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | √                                                   |
| 🗵 Coal Tar Products                                                            | Skin, lung, mucous membrane carcinogen Skin irritation; photosensitization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | V                                                   |
| ☐ Petroleum Pitch                                                              | -(Same as Coal Tar Products)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
| Lime                                                                           | Irritant to skin, eyes, mucous membranes, e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ic.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | V                                                   |
| ☐ Phosphoric Acid > 23                                                         | Primary Irritant - skin, eyes, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | i de la companya del companya de la companya del companya de la co | 1. 1 1 ± 1 ± 1√ .                                   |
| □ Sodium Silicate                                                              | irritant to skin, eyes, mucous membranes, e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 12500 000                                           |
| □ (N. 1/2 A)                                                                   | The state of the s |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
| 0                                                                              | The second secon | - 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                     |
| EMERGENCY OR FIRST AID                                                         | PROCEDURES:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
|                                                                                | n skin or flush from eyes using copious amou                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | nts of water.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                     |
| Coal Tar Products: I                                                           | Remove from skin by washing with soap and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | water. DO NOT use solvents. Same for petrol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | eum pitch.                                          |
| □ Other:                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ·                                                   |
|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
|                                                                                | SECTION VI - REA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ACTIVITY DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                     |
| Hazardous decomposition<br>Hazardous Polymerization                            | : 2020 Smay occur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Store in cool, moist area p                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | rior to use.                                        |
| Most refractory products a<br>disposal procedures may<br>disposal information. | nay be landfilled. However, since your applica                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | tion of this product may change its chemical ch<br>ou should consult the governmental authority                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | aracteristics, and since<br>having jurisdiction for |
| COMMENTS:                                                                      | · · · · · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | •                                                   |
|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                     |
|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
|                                                                                | <u> </u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
| ···                                                                            | SECTION VIII - SPECIAL PR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OTECTION INFORMATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                     |
| RESPIRATORY PROTECTIO                                                          | N (CHECK TYPE):   Approved Dust                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Other (Specify): operation generates dust in excess of allowab                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | I. It                                               |
| PROTECTIVE GLOVES (CH                                                          | IECK TYPE):   Acid Resistant   Imp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | other (Specify): direc                              |
| FOOT PROTECTION (CHEPROTECTIVE CLOTHING (                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | npermeable .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | conta                                               |
|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | · · · · · · · · · · · · · · · · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u> </u>                                            |
|                                                                                | SECTION IX - SPEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | IAL PRECAUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
| ☐ If block is checked, p                                                       | roduct contains coal tar products. Workers sho                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ould not be exposed to furnace "burn-in" vola                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | tiles.                                              |
| ☐ Other (Specify):                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
| ·                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |
|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |

2-17-00 **846** 

# **MATERIAL SAFETY DATA SHEET**

Date: 04/25/97

No. 846

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265 EMERGENCY TELEPHONE NUMBER — 573-473-3626

#### SECTION I

**PRODUCT NAME:** 

**GREENKLEEN-60** 

**GREENKLEEN-60 Plus** 

**PRODUCT TYPE:** 

Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

**CHEMICAL FAMILY:** 

SiO₂ CaO = 30-35% = 2-4%  $Al_2O_3 = 58-62\%$ 

1.%

FORMULA: Not Applicable

# SECTION II

Fe<sub>2</sub>O<sub>3</sub>

PRODUCT HAZARDOUS INGREDIENTS

| CHEMICAL                                             | TLV-TWA                                    | CAS #      |
|------------------------------------------------------|--------------------------------------------|------------|
| Cristobalite (SiO <sub>2</sub> )<br>(<5%)            | 0.05 mg/m <sup>3*</sup><br>Respirable Dust | 14464-46-1 |
| Quartz (SiO <sub>2</sub> )<br>(<2%)                  | 0.1 mg/m <sup>3*</sup><br>Respirable Dust  | 14808-60-7 |
| Amorphous Silica (SiO <sub>2</sub> )<br>(4-6%)       | 2 mg/m <sup>3*</sup><br>Respirable Dust    | 69012-64-2 |
| Alumina (Al <sub>2</sub> O <sub>3</sub> )<br>(8-12%) | 10 mg/m <sup>3*</sup><br>Total Dust        | 1344-28-1  |
| Refractory Cement (8-9%)                             | None (See Section IV)                      | 12005-57-1 |

\*Source: American Conference of Governmental Industrial Hygienists, 1996.

# SECTION III HAZARDS INFORMATION

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### **SECTION IV FIRST AID MEASURES**

#### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

and the property of the second of the second of

CHRONIC:

None Known

**INHALATION: ACUTE:** 

Dust generated can cause breathing discomfort or irritation.

CHRONIC: - - - + 1, 1, -, 8+ Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. If irritation occurs, consult physician.

INHALATION: Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

#### SECTION V **FIRE FIGHTING MEASURES**

FLAMMABLE PROPERTIES:

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS: None** 

#### SECTION VI ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for use), sweep or shovel up and place in a container for disposal.

#### SECTION VII **HANDLING AND STORAGE**

Store in a dry place. Product is non-flammable.

# SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

**SKIN PROTECTION:** Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped bags of castable.

SECTION IX
PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Gray to Tan, Granular Mixture

BOILING POINT: Not Applicable pH:

BOILING POINT: Not Applicable pH: 8-9
SOLUBILITY IN WATER: Slight ODOR: None

SPECIFIC GRAVITY: 2.8 MELTING POINT: Not Applicable

# SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

# SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

# SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

# SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

# SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

# SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS No. 846, Dated 10/18/95.

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\GK60.047

Rec'd from USG 05/10/95

No. 2366

#### MATERIAL SAFETY DATA SHEET

A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 TELEPHONE NUMBER -- 314-473-3626

#### **SECTION!**

PRODUCT: INSBLOK-19

CHEMICAL FAMILY: Slag Wool Fiber and Clay (Mixture)

#### SECTION II PRODUCT INGREDIENTS

| <u>MATERIAL</u>                         | %   | TLV    | PEL        | CAS        |
|-----------------------------------------|-----|--------|------------|------------|
|                                         |     | mg/m³  | mg/m³      | NUMBER     |
| Slag Wool fiber *                       | >60 | 10     | 15(T)/5(R) | 65997-17-3 |
| Expanded perlite                        | <15 | 10     | 15(T)/5(R) | 93763-70-3 |
| Starch                                  | <5  | 10     | 15(T)/5(R) | 9005-25-8  |
| Cellulose (recycled paper)              | <5  | 10     | 15(T)/5(R) | 9004-34-6  |
| Kaolin                                  | <20 | 10     | 15(T)/5(R) | 1332-58-7  |
| Asphalt Wax Emulsion                    | < 2 | 5      | 5          | 8052-42-4  |
| Silica, crystalline* (quartz)           | 0-2 | 0.1(R) | 0.1(R)     | 14808-60-7 |
| (* trace quantity)                      |     | , ,    |            |            |
| • • • • • • • • • • • • • • • • • • • • |     |        | •          |            |

If laminated, contains the following adhesive:

Vinyl alcohol polymer

(NE)

(NE)

9002-89-5

\* - WHMIS Class D2B

(T) - Total dust (R) - Respirable

(NE) - Not Established

#### SECTION III PHYSICAL DATA

**APPEARANCE AND ODOR:** 

Tan-colored board, low odor.

**DENSITY:** 

16-20 pcf

SOLUBILITY IN WATER:

None

#### SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED):

None

**EXTINGUISHING MEDIA:** 

Not Combustible

SPECIAL FIRE FIGHTING PROCEDURES:

None. For Fire hazard Classification information see the

product specification sheets.

SPECIAL FIRE FIGHTING PROCEDURES:

None

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None

PRODUCT: INSBLOK-19 Page 2/4

#### **SECTION V** HEALTH HAZARD DATA

Dust generated from this product would be considered a nuisance dust. This product can release nuisance dust in handling or during use. Eye, nose, throat, and upper respiratory irritation can occur with prolonged exposure to high concentrations. If skin irritation occurs, it is due to mechanical action of fibers rubbing skin.

#### **EFFECTS OF OVEREXPOSURE:**

Dust from this product may cause transitory mechanical irritation to eyes and skin or upper respiratory tract.

EYES:

ACUTE:

Immediately flush eyes thoroughly with plenty of water for 15 minutes to

remove particles. If burning, redness, itching, pain or other symptoms persist

or develop, consult physician.

CHRONIC: None Known.

SKIN:

ACUTE:

Direct, prolonged or repeated contact with the skin may cause irritation.

Rubbing of this product against the skin can result in abrasions. Rinse with water until free of material to avoid abrasions, then wash skin thoroughly with

soap and water. If irritation persists, consult physician.

CHRONIC: None Known.

INHALATION: ACUTE:

Inhalation of dusts from this product may irritate the nose, throat, lungs, and upper respiratory tract. Persons subjected to large amounts of this dust will be forced to leave area because of nuisance conditions such as coughing, sneezing and nasal irritation from dust. If respiratory symptoms persist,

consult physician.

CHRONIC: Chronic overexposure to respirable crystalline silica can result in lung

disease(i.e., silicosis) and/or lung cancer.

If board is cut with a power saw, dust may contain respirable silica and mineral fiber. Long term breathing of quantities of respirable silica exceeding the TLV may cause lung disease. Although inconclusive, three recent industry-supported research studies indicate that factory workers who were first employed in the manufacture of mineral wool or glass wool more than 30 years ago have a somewhat higher risk of lung cancer or other disease than the general public. Tobacco smoking by these workers was found to contribute to the higher incidence of lung cancer. Because of this it is recommended that people handling this material on a regular basis not smoke.

The scientists reporting these results and independent scientists reviewing these results agree that further study is necessary to determine what other factors might be responsible for this reported increased risk. Further studies are now being conducted to investigate what effects other occupational exposures and lifestyle had on these workers. The records will also be examined to learn if these workers had exposure to other known carcinogens in the past,

Results from two separate long-term animal inhalation studies showed that breathing of airborne mineral wool fiber did not cause any lung cancer or other lung diseases.

When installing or otherwise handling this product, wear a NIOSH/MSHA-approved dust mask or respirator, gloves and long sleeved, loose-fitting clothing closed at the neck and wrists. Wear safety glasses or goggles while installing.

INGESTION:

ACUTE:

Unkown, Call physician.

CHRONIC:

Unkown.

PRODUCT: INSBLOK-19

Page 3/4

#### SECTION V HEALTH HAZARD DATA (Continued)

#### **EMERGENCY AND FIRST AID PROCEDURES:**

EYES: Flush thoroughly with water for 15 minutes to remove particles. If irritation persists, consult physician.

SKIN: Irritated areas should be wash thoroughly by rinsing gently with cool water followed with warm water and mild soap to remove fiber from skin.

INHALATION: Inhalation of dusts from this product can irritate the nose, throat, lungs, and upper respiratory tract. Leave the area of dust exposure and remain away until coughing and other symptoms subside. If respiratory symptoms persist (irritation, cough, nausea, dizziness, etc.), consult physician. INGESTION: Call a physician.

TARGET ORGANS: Respiratory Tract, Eyes, and Skin

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED: Pre-existing upper respiratory and lung disease such as, but not limited to, bronchitis, emphysema and asthma.

PRIMARY ROUTES OF ENTRY: Inhalation, Eyes and Skin contact.

#### CARCINOGENIC OF INGREDIENTS:

| <u>MATERIAL</u>               | IARC | <u>NTP</u>  | <u>OSHA</u> |
|-------------------------------|------|-------------|-------------|
| Respirable Crystalline Silica | 2A   | Anticipated | Not Listed  |
| Slag Wool Fiber               | 2B   | Not Listed  | Not Listed  |

The quantity of respirable crystalline silica in this product has not been determined. Respirable crystalline silica is classified by IARC as a probable human carcinogen (2A). Long-term breathing of silica can cause lung disease (i.e., silicosis) and/or possibly lung cancer.

#### SECTION VI REACTIVITY DATA

STABILITY:

Stable

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITY:

Acids (gives off H<sub>2</sub>S under certain acidic conditions).

HAZARDOUS DECOMPOSITION:

None Known.

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Normal cleanup procedures. Avoid creating excessive dust. Wear appropriate protective equipment. WASTE DISPOSAL METHOD: Depose of in accordance with federal, state and local regulations.

PRODUCT: INSBLOK-19

# SECTION VIII SPECIAL PROTECTION INFORMATION

No TLV assigned to this product, see Ingredients Section. Minimize exposures in accordance with good hygiene practice.

<u>RESPIRATORY PROTECTION:</u> Avoid inhalation of dust. Dust from product may cause skin, eye, nose, throat or upper respiratory irritation. Wear a NIOSH/MSHA-approved respirator if TLV is exceeded and/or when dusty conditions exist to guard against nuisance particles.

VENTILATION: Provide general ventilation and local exhaust ventilation to meet TLV requirements.

PROTECTIVE EQUIPMENT: Gloves if dust is irritating, tight fitting goggles in dusty environment. Wear long sleeved, loose fitting clothing closed at the neck and wrists and minimize skin exposure. Wash work clothes separately from other clothing. Rinse washer thoroughly after use. Wear safety glasses or goggles for eye protection to avoid particulate irritation of the eye.

# SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in a dry place. When cutting or breaking, avoid creating excessive dust. Minimize exposures in accordance with good hygiene practice. During handling wear the appropriate respiratory, eye and skin protection if warranted per environmental conditions.

OTHER PRECAUTIONS: During the initial firing of a vessel insulated with this product, if the insulations temperature exceeds approximately 450°F the combustion products of a paper fire will be emitted. If the initial firing or curing is done in an oxygen deficient atmosphere, carbon monoxide and aldehydes are likely to be produced. Therefore the adjacent area must be well ventilated.

#### 

Dust hazard. Cut and trim with knife, razor or hand saw. Do not cut with power equipment unless a dust collector is used on the equipment or local exhaust is used and a NIOSH/MSHA-approved respirator is worn. Failure to follow these instructions may result in overexposure to airborne man-made mineral fiber. Airborne man-made mineral fiber and crystalline silica are thought to increase the risk of lung cancer.

Overexposure to dust can cause eye, skin, nose, throat or respiratory irritation. Wear eye and skin protection.

FIRST AID: For skin irritation, rinse with cool water, followed by washing with soap and warm water. For eye irritation, flush eyes thoroughly with water for 15 minutes. If irritation persists, consult a physician. Product safety information: (314) 473-3626.

THIS PRODUCT CONTAINS NO ASBESTOS.

Manufactured for A.P. Green Industries, Inc. by USG Interiors, Inc. 125 S. Franklin Street Chicago, IL 60606



MSDS No: 214 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

#### 1. PRODUCT AND COMPANY IDENTIFICATION

Material Name:

Refractory Ceramic Fiber Product

Common Name:

RCF, Ceramic Fiber, Man-made Vitreous Fiber (MMVF); Synthetic Vitreous Fiber (SVF)

Intended Use:

High temperature industrial thermal insulation

Trade Names:

Kao-Tex™ 2000

Cloth, Tape, Rope

Manufacturer/Supplier:

THERMAL CERAMICS INC. P.O. BOX 923; DEPT. 300

AUGUSTA, GA 30903-0923

Product Stewardship Program: 800-722-5681 / FAX: 706-560-4053 For additional MSDS's, call our automated FAXBACK: 800-329-7444

#### COMPOSITION/INFORMATION ON INGREDIENTS INGREDIENT MANUFACTURER **CAS NUMBER** PERCENT RECOMMENDED OSHA PEL ACGIH TLV Refractories, fibers, aluminosilicate 142844-00-6 80 - 95 Not Established Not Established 0.5 f/cc \* Acrylic latex binder NONE Not Established 7 - 12 Not Established Clay NONE 15 mg/m³ (total); 5 mg/m³ (respirable) 7 - 12Not Established Natural rubber NONE Not Established Not established 1 - 3 Calcium carbonate 1317-65-3 1 - 3 15 mg/m³ (total); 5 mg/m³ (respirable) 10 ma/m<sup>3</sup> Titanium dioxide 13463-67-7 15 mg/m<sup>3</sup> 10 mg/m<sup>3</sup> 1 - 3

#### NOTES:

(See Section 8 for Personal Protection Guidelines.)

### 3. HAZARDS IDENTIFICATION

#### **EMERGENCY OVERVIEW**

#### \*\* WARNING \*\*

- Possible cancer hazard by inhalation. [SEE BELOW]
- · Carbon monoxide may be generated during initial heating.
- Pre-existing medical conditions, including dermatitis, asthma or chronic lung disease may be aggravated by exposure; individuals who are atopic (with a history of allergies) may experience greater amounts of skin and respiratory irritation.

Thermal Ceramics' recommended exposure guideline (REG) for respirable fibers as an 8 hour time weighted average (TWA) exposure, based on air samples collected and analyzed using NIOSH method 7400(B).

MSDS No: 214 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

Possible Health Effects

Target Organs:

Eyes, skin and respiratory system

Primary Entry Route:

Inhalation

Acute effects:

Upper respiratory physical irritation. Irritation and inflammation to the eyes on contact and to

the skin on prolonged contact.

Chronic effects:

Studies to date, involving occupationally exposed workers, have not identified any increased incidence of respiratory disease. Long-term, high-dose exposure to specially-sized, rodent respirable fiber has resulted in the development of fibrosis, lung cancer and mesothelioma in

rats & hamsters. [See Section 11 of this MSDS for more information.]

**Hazard Classification:** 

Although studies, involving occupationally exposed workers, have not identified any increased incidence of respiratory disease, results from animal testing have been used as the basis for

hazard classification:

The Seventh Annual Report on Carcinogens (1994), prepared by the **National Toxicology Program (NTP),** classified respirable refractory ceramic fiber (RCF) and glasswool as

substances reasonably anticipated to be carcinogens.

The International Agency for Research on Cancer (IARC) has classified man-made vitreous fibers (MMVF), including fibrous glasswool, mineral wool (rockwool & slagwool), and refractory ceramic fiber, as possible human carcinogens (Group 2B). The classification of refractory ceramic fiber was based on sufficient evidence of carcinogenicity in animals and no

available data in humans.

The **State of California**, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "ceramic fibers (airborne fibers of respirable size)" as a

material known to the State of California to cause cancer.

The Commission of The European Communities has classified RCF as a substance

which should be regarded as if it is carcinogenic to man.

IARC has also classified respirable crystalline silica, a possible byproduct of RCF devitrification following sustained, high temperature use (>1800°F), as a substance known to be carcinogenic to humans (Group 1). [See Section 16 of this MSDS for more information.]

Signs and Symptoms of Overexposure:

Eve Contact:

Physical irritation - inflammation

Skin Contact:

Physical irritation - rash

Ingestion:

May cause temporary irritation to the gastrointestinal tract. Irritation or screness in throat, nose and respiratory tract

4. FIRST AID MEASURES

Eve Contact:

Flush with large amounts of water for at least 15 minutes. Do not rub eyes.

Skin Contact:

Wash affected area gently with soap and water. Skin cream or lotion after washing may be

helpful.

Ingestion:

Do not induce vomiting; drink plenty of water.

Inhalation:

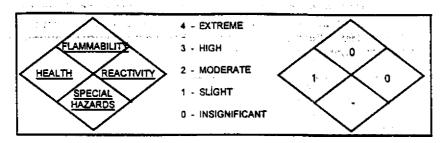
Remove affected person to clean fresh air. If breathing is difficult, have trained person

administer oxygen.

\*\* If any of the symptoms persist, seek medical attention immediately.

214 MSDS No: Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

#### FIRE FIGHTING MEASURES 5.



NFPA Unusual Hazards:

None

Flash Point:

Ignition at approximately 300° F for organic carrier binder Use extinguishing media appropriate to the surrounding fire.

Extinguishing Media: Explosion Hazards:

Protective Equipment:

Wear NIOSH approved respirator together with other protective gear appropriate to the

surrounding fire...

#### ACCIDENTAL RELEASE MEASURES

Spill/Leak Procedures:

Avoid creating airborne dust. Follow routine housekeeping procedures. Vacuum only with HEPA filtered equipment. If sweeping is necessary, use a dust suppressant and place material in closed containers. Do not use compressed air for clean-up. Personnel should wear gloves, goggles and approved respirator. Avoid clean-up procedures that could result in water pollution.

### HANDLING AND STORAGE

Handling:

Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

Handling After-Service:

- Aluminosilicate fibers become friable after exposure to high temperatures and may be partially converted to crystalline silica. [See Section 16 for additional information.] Handling after-service fibers may result in exposure to crystalline silica and fibers. It is possible that other contaminants might also be present depending on the material's application. [See Section 8 - Personal Protection Equipment.]
- To reduce exposure to these materials, follow the recommendations in Section 8 and minimize dust by dampening the material with a water/surfactant mist. Do not allow water to accumulate on the floor.

Storage:

This product is stable under all conditions of storage. Store in original factory container in a dry area. Keep container closed when not in use.

#### EXPOSURE CONTROLS/PERSONAL PROTECTION 8.

Engineering Controls:

Use engineering controls such as ventilation and dust collection devices to reduce airborne fiber concentrations to the lowest attainable level. Good ventilation should be provided during

Respiratory Protection:

When it is not possible or feasible to significantly reduce airborne fiber and dust levels through engineering controls, or until they are installed, employees are encouraged to use good work practices together with respiratory protection. Before providing respirators to employees (especially negative pressure type), employers should 1) monitor for airborne fibers and respirable cristobalite concentrations using NIOSH method 7400(B) and 7500 respectively and select the appropriate respiratory protection based upon the results of that

MSDS No: 214 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

monitoring, 2) have the workers evaluated by a physician to determine the workers' ability to wear respirators, and 3) implement respiratory protection training programs. Use NIOSH certified respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment. For the most current information on respirator selection, contact your supplier.

#### Recommended Respiratory Protection When Handling RCF Products

### AS-PRODUCED and AFTER-SERVICE FIBER (1)

| CONCENTRATION (2) | RESPIRATOR                                                                                                                                                                                          |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Up to 0.5 f/cc    | . Disposable particulate respirator (N, R, or P, 95 rated) (3) (4)                                                                                                                                  |
| 0.5 f/cc - 5 f/cc | <ul> <li>Half-mask, air-purifying respirator with high efficiency<br/>particulate air (HEPA) or P100 rated filter cartridges.</li> </ul>                                                            |
| 5 f/cc - 25 f/cc  | <ul> <li>Full facepiece air-purifying respirator with HEPA or P100 rated<br/>filter cartridges or powered air-purifying respirator (PAPR) with<br/>HEPA or P100 rated filter cartridges.</li> </ul> |
| > 25 f/cc         | . Full facepiece positive pressure supplied air respirator.                                                                                                                                         |

<sup>(1)</sup> Unless air monitoring data indicates a lower exposure, as a minimum, use a full facepiece air-purifying respirator with HEPA or P100 rated filter cartridges during furnace tear out or when conducting RCF removal in a confined area. [See Section 16] (2) Eight hour time weighted average (TWA) exposures determined by air samples collected and analyzed using NIOSH method 7400(B)

for airborne fibers.

NOTE: For unknown exposures or when working with other contaminants, consult an industrial hygienist for air monitoring and respirator selection.

Protective Clothing:

Wear full body clothing, gloves, hat and eye protection. Wash work clothes separately from other clothing. Rinse washer after use. If you take work clothing home, it is recommended you

vacuum your clothes with a HEPA filtered vacuum before leaving the work area.

Eve Protection:

Goggles/safety glasses with sideshields should be worn.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

White odorless shiny thread or yarn

Chemical Family:

Vitreous Aluminosilicate Fibers

Vapor Pressure:

Vitreous Aluminosincate Fibers

Vapor 1 1633016.

Not applicable

Vapor Density: Specific Gravity Range: Not applicable

Boiling Point:

Not applicable >3200°F (1768°C

Volatile by Volume (%):

2.50 - 2.70

Melting Point: Water Solubility (%): >3200°F (1768°C) Not soluble in water

pH:

Not applicable

### 10. STABILITY AND REACTIVITY

Hazardous Polymerization:

Will not occur

Chemical Incompatibilities:

Hydrofluoric acid, phosphoric acid, strong alkalies

Hazardous Decomposition Products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, smoke, and small amounts

of aromatic and aliphatic hydrocarbon ....

<sup>(3)</sup> Not recommended for fiber chopping, blanket/module folding, cutting, installation or other tasks using power tools and machinery (e.g. band sawing, lathing, grinding, drilling, die cutting) unless effective engineering controls reduce fiber exposures.

(4) If oil present, use only R or P rated filters.

#### 11. TOXICOLOGICAL INFORMATION

Epidemiology:

Industry epidemiologic investigations of RCF production workers are ongoing. The preliminary evidence, obtained from employees in RCF manufacturing facilities, is as follows:

- 1) There is no evidence of any fibrotic lung disease (interstitial fibrosis) on x-ray.
- 2) There is no evidence of any lung disease among those employees exposed to RCF that have never smoked. Data, however, indicates that RCF workers who smoke may have a greater reduction in pulmonary function than those who do not. Therefore, it is recommended that persons who work with RCF do not smoke.
- 3) A statistical trend was observed in the exposed population between the duration of exposure to RCF and a decrease in some measures of pulmonary function. These observations are clinically insignificant. The results would be interpreted as being within the normal range if these observations were made on an individual employee.
- 4) Pleural plaques (thickening along the chest wall) have been observed in a small number of employees who had a long duration of employment. There are several occupational and non-occupational causes for pleural plaques. Pleural plaques are a marker of exposure only and under most circumstances are not associated with any measurable effect on lung function.

Toxicology:

A number of toxicologic bioassay studies with rats and hamsters on the health effects of refractory ceramic fiber (RCF) inhalation exposures have been completed. In a lifetime, nose-only inhalation study using rats exposed to specially prepared RCF at a maximum tolerated dose (MTD) (30 mg/m³), the animals developed progressive lung damage (interstitial fibrosis), lung cancer and cancer of the pleural lining between the chest wall and lung (mesothelioma). Hamsters exposed under the same conditions developed interstitial fibrosis and pleural cancer but no lung cancer.

A multiple dose inhalation study in rats at exposures of 3, 9, and 16 mg/m³ (approximately 25, 75 and 115 fiber/cc) was also carried out. The dose responsiveness of rats to the adverse effects of RCFs was established. At all exposure levels there was no statistically significant increase in lung tumors in the animals. A single mesothelioma was diagnosed in one of the 116 animals in the 9 mg/m³ exposure group. No fibrosis was observed in the 3 mg/m³ exposure group. These data tend to indicate that a critical dose level may exist below which neither fibrosis nor tumors are observed, i.e., a practical threshold.

#### 12. ECOLOGICAL INFORMATION

Adverse effects of this material on the environment are not anticipated.

#### 13. DISPOSAL INFORMATION

Waste Management:

To prevent waste materials becoming airborne, a covered container or plastic bagging is recommended. Comply with federal, state and local regulations. Method of disposal: Landfill. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate.

RCRA:

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40 CFR 261.20-24).

TCLP Disposal:

As manufactured, refractory ceramic fiber blankets were tested using EPA's Toxicity Characteristics Leaching Procedure (TCLP). Results showed there were no detectable contaminants or detectable leachable contaminants which exceeded the regulatory levels.

MSDS No: 214 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

TRANSPORT INFORMATION

Department of Transportation (D.O.T.):

Hazard Class:

Not regulated Not applicable

Placards: Bill of Lading:

Labels:

Not applicable Product name

United Nations (UN) Number:

Not applicable

North America (NA) Number: Not applicable

### REGULATORY INFORMATION

United States Regulations

SARA Title III:

This product does not contain any substances reportable under Sections 302, 304, 313 (40)

CFR 372). Sections 311 and 312 apply.

OSHA:

Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103. Components of this product are considered to be hazardous as defined by the OSHA Hazard Communication

Standard.

TSCA:

All substances contained in this product are listed in the TSCA Chemical Inventory [Section

California:

Listed as "Ceramic Fibers (airborne particles of respirable size)" Proposition 65. The Safe

Drinking Water and Toxic Enforcement Act of 1986: Known to the State of California to cause

Other States:

RCF products are not known to be regulated by states other than California; however, state

and local OSHA and EPA regulations may apply to these products. Contact your local

agency if in doubt.

#### International Regulations

Canadian WHMIS:

Class D-2A Materials Causing Other Toxic Effects:

Canadian EPA: European Class: All substances in this product are listed, as required, on the Domestic Substance List (DSL). Refractory ceramic fiber (RCF) has been classified by the European Union as Category 2 carcinogen, that is it "should be regarded as if it is carcinogenic to man". It has also been

classified as an "irritant".

#### 16. OTHER INFORMATION

Precautionary Measures to be Taken After Service and Upon Removal:

As manufactured, RCF products are vitreous aluminosilicates which may transform upon heating at temperatures above 1800°F to mullite and cristobalite (a form of crystalline silica). Removal of after-service RCF may generate respirable dust. Prolonged/repeated inhalation of respirable free crystalline silica dust may cause delayed lung injury (silicosis). In evaluating crystalline silica as a cancer risk, the International Agency for Research on Cancer (IARC) reviewed several studies from different industries and concluded that crystalline silica from occupational sources inhaled in the form of quartz or cristobalite is carcinogenic to humans (Group 1) [IARC Monograph Vol. 68, June 1997]. However, in reaching its conclusion. IARC stated that the carcinogenicity in humans could not be found in all industries reviewed and that carcinogenicity might be dependent on inherent characteristics of crystalline silica or on external factors affecting biological activity (e.g. cigarette smoking) or distribution of its polymorphs. The OSHA PEL for respirable cristobalite is 0.05 mg/m<sup>3</sup>. Appropriate ventilation and respiratory protection should be provided in compliance with OSHA standards. (See Section 8)

#### **HMIS Hazard Rating:**

**HMIS Acute Health:** 

**HMIS Flammable:** 

**HMIS Reactivity:** 

۵

MSDS No: 214 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

**HMIS Personal Protective:** To be determined by user \*See Section 3 of the MSDS for possible chronic health effects.

#### SARA Title III Hazard Categories:

Acute Health: Yes Pressure Hazard: No Chronic Health: Yes Reactivity Hazard: No

Fire Hazard: No

Definitions:

American Conference of Governmental Industrial Hygienists

CAS:

Chemical Abstracts Service Registry Number

EPA: f/cc:

ACGIH:

Environmental Protection Agency Fibers per cubic centimeter

HEPA: High Efficiency Particulate Air
HMIS: Hazardous Materials Identification System

mg/m3: Milligrams per cubic meter of air

mppcf: Million particles per cubic meter
MSHA: Mine Safety and Health Administration
NFPA: National Fire Protection Association

NIOSH: National Institute for Occupational Safety and Health OSHA: Occupational Safety and Health Administration RCRA: Resource Conservation and Recovery Act

SARA: Superfund Amendments and Reauthorization Act

Title III: Emergency Planning and Community Right to Know Act

...Section 302: Extremely Hazardous Substances

...Section 304: Emergency Release MSDS/List of Chemicals

...Section 312: Emergency and Hazardous Inventory ...Section 313: Toxic Chemicals Release Reporting

STEL: Short-Term Exposure Limit

TCLP: Toxicity Characteristics Leaching Procedures (EPA)

TLV: Threshold Limit Values (ACGIH)
TSCA: Toxic Substance Control Act

WHMIS: Workplace Hazardous Materiais Information System (Canada)

29 CFR 1910.134 & 1926.103: OSHA Respiratory Protection Standard

29 CFR 1910.1200 & 1926.59: OSHA Hazard Communications Standard

Revisions: Replaces revision 03/16/98. Revised Sections 3, 8 and 11 with updated information.

Reasonable care has been taken in the preparation of the information contained in this Material Safety Data Sheet and is given in good faith. However, Thermal Ceramics Inc. assumes no responsibility as to the accuracy or suitability of such information and no warranty, expressed or implied, is made.

MSDS No: 214 Date Prepared: 05/01/1987 Revised/Reviewed: 06/01/1998

### PRODUCT SAFETY INFORMATION

#### REFRACTORY CERAMIC FIBER PRODUCT

#### WARNING:

This product contains refractory ceramic fiber, which has been identified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans.

Avoid breathing fiber particulates and dust

#### RISKS:

- Possible cancer hazard by inhalation.
- May cause temporary irritation to eyes, skin and respiratory tract.

#### PRECAUTIONARY MEASURES:

- Minimize airborne particulates and dust with engineering controls.
- · Wear a NIOSH certified respirator.
- · Wear long sleeved, loose-fitting clothing, eye protection, and gloves.
- · Wash work clothing separately and rinse washing machine after use.

#### FIRST AID MEASURES:

Eyes:

Flush with Water.

Skin:

Wash with soap and warm water.

Ingestion:

Do not induce vomiting. Get medical attention if gastrointestinal symptoms develop.

Inhalation:

Remove to fresh clean air.

If any of the above irritations persists, seek medical attention immediately.

FOR ADDITIONAL PRODUCT INFORMATION AND WORK PRACTICES, REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS).

THERMAL CERAMICS INC. P.O. BOX 923 DEPT. 300 AUGUSTA, GA 30903-0923 (800) 722-5681



Canadian WHMIS Class D-2A: Material causing other toxic effects.

Label No:

1-0991 (Rev. 05/98)

Date: 07/17/97 No. 1287

#### A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626 Transportation Emergencies — Contact CHEMTREC at 800-424-9300 International Emergencies — Contact CHEMTREC at 703-527-3887 Health Emergencies - Contact Your Local Poison Center

#### SECTION I

PRODUCT NAME:

'SAIRSET® DC

PRODUCT TYPE:

Refractory Mortar

Canadian WHMIS Classification: D,2

Dry and Liquid Sodium Silicate

NFPA Rating: 1-0-0

**CHEMICAL FAMILY:** 

SiO<sub>2</sub> = 58-61%

= 32-35%Al<sub>2</sub>O<sub>3</sub>

FORMULA: Not Applicable

1344-09-8

Fe<sub>2</sub>O<sub>3</sub>

NaKO 2-3%

#### **SECTION II** PRODUCT HAZARDOUS INGREDIENTS

| CHEMICAL                                     | TLV-TWA                                     | CAS#       |
|----------------------------------------------|---------------------------------------------|------------|
| Cristobalite (SiO <sub>2</sub> )<br>(10-20%) | 0.05 mg/m <sup>3</sup> *<br>Respirable Dust | 14464-46-1 |
| Quartz (SiO <sub>2</sub> )<br>(10-20%)       | 0.1 mg/m <sup>3*</sup><br>Respirable Dust   | 14808-60-7 |

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1996.

#### SECTION III **HAZARDS INFORMATION**

(None)

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### **SECTION IV** FIRST AID MEASURES

#### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust can cause mechanical irritation. Sodium silicate can cause eye

injury or irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Can cause mechanical abrasion. Sodium silicate can cause skin drying

and chapping.

CHRONIC:

None Known

**INHALATION:** ACUTE:

Dust, if present, can cause upper respiratory irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

SKIN:

Wash with soap and water. Seek medical attention.

INHALATION: Remove to fresh air. Seek medical attention.

<u>INGESTION</u>:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

#### SECTION V **FIRE FIGHTING MEASURES**

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

**UNUSUAL FIRE AND EXPLOSION HAZARDS: None** 

#### **SECTION VI ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: Sweep or shovel up and place in a container for disposal. Pre-dampening reduces tendency to dust.

#### SECTION VII **HANDLING AND STORAGE**

Store in a dry place. Product is non-flammable.

Date: 09/26/97 No. 1062

# A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO 65265

APGI Emergency Telephone Number — Call 573-473-3626
Transportation Emergencies — Contact CHEMTREC at 800-424-9300
International Emergencies — Contact CHEMTREC at 703-527-3887
Health Emergencies — Contact Your Local Poison Center

#### **SECTION I**

**PRODUCT NAME:** 

GREENPAK-85-P

GREENPAK-85-MP GREENPAK-85-MP Plus

GREENPAK-85-P Plus GREENPAK-85-P GR

GREENPAK-85-MP RAM

GREENPAK SE DE

GREENPAK-85-MP RAM Plus

GREENPAK-85-PF Plus

GREENPAK-85-MP S GREENPAK-85-MP S Plus

PRODUCT TYPE:

Plastic Refractory (Solid or Wet)

Canadian WHMIS Classification: D,2,E

NFPA Rating: 1-0-0

**CHEMICAL FAMILY:** 

 $SiO_2 = 6-14\%$ 

 $Al_2O_3 = 82-90\%$ 

 $Ai_2O_3 = 62.90\%$  $TiO_2 = 2.3\%$ 

 $Fe_2O_3 = 1-2\%$ NaKO = <1%

 $P_2O_5 = 3-4\%$ 

FORMULA: Not Applicable

# SECTION II PRODUCT HAZARDOUS INGREDIENTS

| CHEMICAL                                                    | <u>TLV-TWA</u>                             | CAS#        |
|-------------------------------------------------------------|--------------------------------------------|-------------|
| Cristobalite (SiO₂)<br>(<10%)                               | 0.05 mg/m <sup>3*</sup><br>Respirable Dust | 14464-46-1  |
| Quartz (SiO <sub>2</sub> )<br>(<2%)                         | 0.1 mg/m³*<br>Respirable Dust              | 14808-60-7  |
| Alumina (Al₂O₃)<br>(<30%)                                   | 10 mg/m³*<br>Total Dust                    | 1344-28-1   |
| Phosphoric Acid (H <sub>3</sub> PO <sub>4</sub> )<br>(<10%) | 1 mg/m³*                                   | 7664-38-2** |

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1996.

# SECTION III HAZARDS INFORMATION

Since this product contains phosphoric acid, toxic PO, fumes can be formed on burn in.

<sup>\*\*</sup>This product contains phosphoric acid, CAS No. 7664-38-2, which is reportable under Section 313 of Title III of SARA and 40 CFR Part 372. For purposes of reporting environmental discharge use 6% phosphoric acid content.

09/26/97

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### **SECTION IV** FIRST AID MEASURES

#### **EFFECT OF OVEREXPOSURE:**

EYES: ACUTE:

Dust or aggregate can cause mechanical irritation. Phosphoric acid can

cause eye injury.

CHRONIC:

None Known

SKIN:

ACUTE:

Can cause mechanical abrasion. Phosphoric acid can cause skin injury.

CHRONIC: None Known

INHALATION: ACUTE:

CHRONIC:

Dust, if present, can cause upper respiratory irritation. Long-term exposure to dust may cause lung damage.

**INGESTION:** 

ACUTE:

Phosphoric acid is moderately toxic if ingested.

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. Promptly, consult physician.

<u>SKIN:</u>

Promptly wash with soap and water. If irritation occurs, consult physician.

**INHALATION:** Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Physician or poison control center should be advised that product contains phosphoric acid (<7%). Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

#### SECTION V FIRE FIGHTING MEASURES

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

FIRE FIGHTING INSTRUCTIONS:

No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: If heated to decomposition, the phosphoric acid will emit toxic fumes of PO<sub>x</sub>.

Material Safety Data Sheet Product: GREENPAK-85-P, etc.

#### SECTION VI ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: Sweep, shovel up, or pick up and place in a container for disposal.

# A TELE POLICE DE LA CALLA DE LA CALLA DE LA CALLA DE SECTION VII A LA CALLA DE MANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

# SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

**ENGINEERING CONTROLS:** General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

SKIN PROTECTION: Leather gloves and long-sleeved and long-legged clothing should be

worn to prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped containers of product.

#### SECTION IX

#### PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Gray Mixture (Solid or Wet)

BOILING POINT: Not Applicable pH: 3-5

SOLUBILITY IN WATER: None ODOR: None

SPECIFIC GRAVITY: 3.2-3.4 MELTING POINT: Not Applicable

# SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

# SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

# SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

# SECTION XIII DISPOSAL CONSIDERATIONS

As supplied, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

Supplier can make no statement concerning disposal of <u>used</u> product, since product may become contaminated by hazardous materials during use.

#### SECTION XIV TRANSPORT INFORMATION

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

# SECTION XV REGULATORY INFORMATION

TSCA Status: All Components Listed Canadian DSL: All Components Listed

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### SECTION XVI OTHER INFORMATION

MSDS Status: Replaces MSDS Dated 02/05/97

**Note:** This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Senior Technical Consultant Phone: 573-473-3392

JH:\MSDS\CURRENT\GP85P.097



HARBISON-WALKER REFRACTORIE.
Division of Orossor Industries, Inc.

2 Gatemay Center, Pittsburgh, Peansylvania 1522

TELEPHONE: (412) 562-620 TELETYPE: 710-664-434:

10/01/84

#### DISCLAIMER

This data sheet is based on OSHA FORM 20 but modified to more adequately suit refractory products. All data are subject to reasonable variation. This information is supplied in good faith by Harbison-Walker and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND HARBISON-WALKER ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET. This data is not part of any contract or condition of sale. It is solely supplied as an accommodation to the buyer.

| SECTION 1 - PRODUC                                                                                                                                                 | CT IDENTIFICATION                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Product Tradename: ALUSA                                                                                                                                           | Type of Refractory:* High Allumina Brick                                               |
| *For chreme containing refractories, indicate approximate percents  Contains chrome are consisting predominantly of the mineral chrom  Cantains chromium III oxide | ige, and check applicable block.<br>mite (MgFe).0.(AlFeCr) <sub>2</sub> O <sub>3</sub> |

|     |                   |                                | SECT          | TION II - HAZARDO   | OUS INGREDIENTS              |                |                                |
|-----|-------------------|--------------------------------|---------------|---------------------|------------------------------|----------------|--------------------------------|
| SEE | CHECKED BLOCKS    | GEN, CHEM.<br>FORMULA          | C.A.S. NUMBER | PERCENTAGE<br>RANGE | OSHA P.E.L.                  | ACGIH TLVO     | NIOSH CRITERIA<br>DOCUMENT NO. |
|     |                   |                                |               | -                   | 10 mg/m <sup>3</sup>         |                |                                |
| ĵα  | Quertz            | SiO <sub>2</sub>               | 001317799     |                     | % Respirable Quartz +2       | 0.1 mg/m³      | 75-120                         |
| ТX  | Cristobalito      | sio <sub>2</sub>               | 14464-46-1    | 0 - 1%              | ½ Quartz Value               | 0.05 mg/m³     | 75-120                         |
|     | Tridymite         | SiO <sub>2</sub>               | 15468-32-3    |                     | ½ Quartz Value               | 0.05 mg/m³     | 75-120                         |
|     | Fused Silica      | siO <sub>2</sub>               | 007631869     |                     | NONE                         | Use Quartz TLV | 75-120                         |
| 0   | Coal Tar Products | N/A                            | MX8001589     | . •                 | 0.2 mg/m <sup>3</sup>        | SAME           | 78-107                         |
|     | Petroleum Pitch   | N/A                            | MX8052424     |                     | NONE                         | 5.0 mg/m³      | 78-106                         |
|     | Phasphoric Acid   | H <sub>3</sub> PO <sub>4</sub> | 007664382     |                     | 1.0 mg/m <sup>3</sup> (mist) | SAME           | NONE                           |
|     | Lime              | CeO                            | 001305788     |                     | 5.0 mg/m <sup>3</sup>        | 2.0 mg/m³      | NONE                           |
| _   | Sodium Silicate   | 03-Si .2Na                     | 006834920     |                     | NONE                         | NONE           | NONE                           |
|     |                   |                                |               |                     |                              |                |                                |
| ۵   |                   |                                |               |                     |                              |                |                                |
|     |                   |                                |               |                     |                              |                |                                |

|                                                                 | •     |                  |                |     |             |     |
|-----------------------------------------------------------------|-------|------------------|----------------|-----|-------------|-----|
|                                                                 |       | SECTION III - PI | YSICAL DATA    |     | <del></del> |     |
| ppearance and Odor: Buff color; no                              | odor. |                  |                |     |             |     |
| pecific Gravity: 2.55                                           |       | pH: N            | D '            |     |             | 100 |
| olubility in Water: Insoluble<br>oluble Constituents:<br>Other: | . "   | •                |                | ٠   |             | · . |
|                                                                 |       |                  |                |     |             |     |
|                                                                 | SECT  | ION IV - FIRE A  | ND EXPLOSION D | ATA |             |     |

UNLESS OTHERWISE NOTED, NONE. Product is a retractory.

NOTES:

2.了多种是是不是一个人才不是需要是做好。我是不够的完全最好的女生最大的最高,就被我们还是我是最好的的。他们也不是一个一个一个一个一个一个

|                                                                                                                                                                                                                                                                                                                                         | The state of the s |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | EXPOSUR                            |          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------|
| INGREDIENT                                                                                                                                                                                                                                                                                                                              | EPTECTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | OF OVEREXPOSURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5 - 10 3 da 14 da 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PROLONGED                          | SHOI     |
| □ Free Crystalline Silica                                                                                                                                                                                                                                                                                                               | Delayed lung fibresis - silicosis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | V.                                 |          |
| _ Coal Tar Products                                                                                                                                                                                                                                                                                                                     | Skin, lung, mucous membrane carcinoge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | en .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | V                                  |          |
| _ Coal Tar Products                                                                                                                                                                                                                                                                                                                     | Skin irritation; photoconsitization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | V.                                 |          |
| Petroleum Pitch                                                                                                                                                                                                                                                                                                                         | (Same as Coal Tar Products)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
| □ lime                                                                                                                                                                                                                                                                                                                                  | Irritant to skin, eyes, muceus membrane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | s, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | A A A A A A A A A A A A A A A A A A A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                    | 1        |
| □ Phespharic Acid                                                                                                                                                                                                                                                                                                                       | Primary Irritant - skim, eyes, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | in the state of th |                                    | -1       |
| □ Sadium Silicate                                                                                                                                                                                                                                                                                                                       | Irritant to skin, eyes, mucous membrane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | s, etc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    | 1        |
|                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
|                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
| EMERGENCY OF FIRST AL                                                                                                                                                                                                                                                                                                                   | D PROCEDURES:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
|                                                                                                                                                                                                                                                                                                                                         | n skin or flush from eyes using copious an                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | nounts of water.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
| ☐ Coal Tar Products:                                                                                                                                                                                                                                                                                                                    | Remove from skin by washing with soap                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | and water. DO NOT use solvent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | . Same for petrol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | eum pitch                          |          |
| □ Other:                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
|                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
|                                                                                                                                                                                                                                                                                                                                         | SECTION VI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | REACTIVITY DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    | ·        |
| STABILITY: X STABLE                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | COMMENTS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
|                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | COMMENT (3:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
|                                                                                                                                                                                                                                                                                                                                         | ls to avoid)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | A Committee of the Comm |                                    |          |
| incompatability (material<br>Hazardous decomposition                                                                                                                                                                                                                                                                                    | products:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
| Incompatability (materia                                                                                                                                                                                                                                                                                                                | products:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
| incompatability (material<br>Hazardous decomposition                                                                                                                                                                                                                                                                                    | products:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
| incompatability (material<br>Hazardous decomposition                                                                                                                                                                                                                                                                                    | products:  1:   1:   1:   1:   1:   1:   1:   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |          |
| incompatability (materio<br>Hazardous decomposition<br>Hazardous Polymerization                                                                                                                                                                                                                                                         | products:  1:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | LL AND LEAK PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | as its chamical ch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | wastarial                          | nd eine  |
| Incompatability (material<br>Hazardous decomposition<br>Hazardous Polymerization<br>Mast refractory products<br>disposal procedures: may                                                                                                                                                                                                | products:  1:   1:   1:   1:   1:   1:   1:   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | lication of this product may chan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ge its chemical che<br>mental authority                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | practoristics, a<br>having jurisdi | nd sine  |
| Incompatability (material<br>Hazardous decomposition<br>Hazardous Polymerization<br>Mast refractory products<br>disposal procedures: may<br>disposal information.                                                                                                                                                                       | products:  n:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | lication of this product may chan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ge its chemical che<br>mental authority                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | practoristics, a<br>having jurisdi | nd sine  |
| Incompatability (material<br>Hazardous decomposition<br>Hazardous Polymerization<br>Mast refractory products<br>disposal procedures: may                                                                                                                                                                                                | products:  n:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | lication of this product may chan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ge its chemical ch<br>mental authority                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | practoristics, a<br>having jurisdi | nd sine  |
| Incompatability (material<br>Hazardous decomposition<br>Hazardous Polymerization<br>Mast refractory products<br>disposal procedures: may<br>disposal information.                                                                                                                                                                       | products:  n:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | lication of this product may chan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ge its chemical che<br>mental authority                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | practoristics, a<br>having jurisdi | nd sine  |
| Incompatability (material<br>Hazardous decomposition<br>Hazardous Polymerization<br>Mast refractory products<br>disposal procedures: may<br>disposal information.                                                                                                                                                                       | products:  n:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | lication of this product may chan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ge its chemical ch<br>mental authority                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | practoristics, a<br>having jurisdi | nd sine  |
| Incompatability (material<br>Hazardous decomposition<br>Hazardous Polymerization<br>Mast refractory products<br>disposal procedures: may<br>disposal information.                                                                                                                                                                       | products:  1:   1:   1:   1:   1:   1:   2:   3:   3:   3:   3:   3:   3:   3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | lication of this product may chan<br>e, you should consult the govern                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ge its chemical che<br>mental authority                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | practoristics, a<br>having jurisdi | nd sine  |
| Incompatability (material Hezardous decomposition Hezardous Polymorization Mast refractory products disposal procedures may disposal information.                                                                                                                                                                                       | SECTION VIII - SPECIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | lication of this product may chan e, you should consult the govern L PROTECTION INFORMATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ge its chemical chemical chemity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | wacteristics, a<br>having jurisdi  | nd sine  |
| Incompatability (material Hazardous decomposition Hazardous Polymerization Mast refractory products disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION                                                                                                                                                    | products:  1:   1:   1:   1:   1:   1:   2:   3:   3:   3:   3:   3:   3:   3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | lication of this product may chan e, you should consult the govern  PROTECTION INFORMATION  Other (Specify):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | mental authority                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | having jurisdi                     | nd sine  |
| Incompatability (material Hezardous decomposition Hezardous Polymerization  Most refractory products disposal procedures: may disposal information.  COMMENTS:  RESPIRATORY PROTECTIC VENTILATION: Local exhi-                                                                                                                          | SECTION VIII - SPECIA  SECTION VIII - SPECIA  SECTION VIII - SPECIA  SECTION VIII - SPECIA  ON (CHECK TYPE):   Approved Dust  aust ventilation should be provided if routi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PROTECTION INFORMATION  □ Other (Specify):  Impermedia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | excess of allowab                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | having jurisdi                     | etian fi |
| Incompatability (material Hezardous decomposition Hezardous Polymerization  Most refractory products disposal procedures: may disposal information.  COMMENTS:  RESPIRATORY PROTECTIC VENTILATION: Local exhi-                                                                                                                          | SECTION VIII - SPECIA  ON (CHECK TYPE):   Approved Dust  gust ventilation should be provided if routi  HECK TYPE):   Acid Resistant   wed safety glasses, goggles or faceshields                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PROTECTION INFORMATION  □ Other (Specify):  Impermedia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | excess of allowab                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | having jurisdi                     | etian fi |
| Incompatability (material Hazardous decomposition Hazardous Polymorization Most refractory products disposal procedures may disposal information. COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhibition EYE PROTECTION: Appro                                                                                                 | SECTION VIII - SPECIA  ON (CHECK TYPE):   Approved Dust  pust ventilation should be provided if routi  HECK TYPE):   Acid Resistant   wed safety glasses, goggles or faceshields  ECK TYPE):   Metatarsal safety                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PROTECTION INFORMATION  □ Other (Specify):  Impermedia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | excess of allowab                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | having jurisdi                     | etian fi |
| Incompatability (material Hazardous decomposition Hazardous Polymerization Hazardous Polymerization Hazardous Polymerization Most refractory products disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTIC VENTILATION: Local exhibition Local exhibition of the protective gloves (CI EYE PROTECTION: Appro | SECTION VIII - SPECIA  ON (CHECK TYPE):   Approved Dust  pust ventilation should be provided if routi  HECK TYPE):   Acid Resistant   wed safety glasses, goggles or faceshields  ECK TYPE):   Metatarsal safety                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | L PROTECTION INFORMATION  Other (Specify): ne operation generates dust in impermeable Abrasion I should be used when handling in the control of the control  | excess of allowab                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | having jurisdi                     | etian fi |
| Incompatability (material Hazardous decomposition Hazardous Polymorization Most refractory products disposal procedures may disposal information. COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhibition EYE PROTECTION: Appro                                                                                                 | SECTION VIII - SPECIA  ON (CHECK TYPE):   Approved Dust  pust ventilation should be provided if routi  HECK TYPE):   Acid Resistant   wed safety glasses, goggles or faceshields  ECK TYPE):   Metatarsal safety                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | L PROTECTION INFORMATION  Other (Specify): ne operation generates dust in impermeable Abrasion I should be used when handling in the control of the control  | excess of allowab                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | having jurisdi                     | etian fi |
| Incompatability (material Hazardous decomposition Hazardous Polymorization Most refractory products disposal procedures may disposal information. COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhibition EYE PROTECTION: Appro                                                                                                 | SECTION VIII - SPECIA  ON (CHECK TYPE):   Approved Dust  pust ventilation should be provided if routi  HECK TYPE):   Acid Resistant   wed safety glasses, goggles or faceshields  ECK TYPE):   Metatarsal safety                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | L PROTECTION INFORMATION  Other (Specify): ne operation generates dust in impermeable Abrasion I should be used when handling in the control of the control  | excess of allowab                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | having jurisdi                     | etian fi |
| Incompatability (material Hazardous decomposition Hazardous Polymorization Most refractory products disposal procedures may disposal information. COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhibition EYE PROTECTION: Appro                                                                                                 | SECTION VIII - SPECIAL SECTION VIII - SPECIAL SECTION VIII - SPECIAL SECTION VIII - SPECIAL SECTION VIIII - SPECIAL SECTION VI | L PROTECTION INFORMATION  Description of this product may chan be presented by the government of the province of the control o | excess of allowab                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | having jurisdi                     | etian fi |
| Incompatability (material Hazardous decomposition Hazardous Polymorization  Most refractory products disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhol PROTECTIVE GLOVES (CI EYE PROTECTION: Appro                                                                              | SECTION VIII - SP!  SECTION VIII - SP!  may be landfilled. However, since your app vary with: locale and are subject to chang  SECTION VIII - SPECIA  ON (CHECK TYPE): Approved Dust pust ventilation should be provided if routi HECK TYPE): Acid Resistant  wed safety glasses, goggles or faceshields  ECK TYPE): A Metatarsal safety  SECTION IX - S  SECTION IX - S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | L PROTECTION INFORMATION  Description of this product may chan e, you should consult the govern  PROTECTION INFORMATION  Other (Specify): Ine operation generates dust in elements of the period of the consult of the c | excess of allowab<br>Resistant () (refractory product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | having jurisdi                     | etian fi |
| Incompatability (material Hezardous decomposition Hezardous Polymorization Hezardous Polymorization Hezardous Polymorization Hezardous Polymorization disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION COMMENTS:  PROTECTIVE GLOVES (CIETE PROTECTION: Appropriately CLOTHING)  PROTECTIVE CLOTHING     | SECTION VIII - SPECIAL SECTION VIII - SPECIAL SECTION VIII - SPECIAL SECTION VIII - SPECIAL SECTION VIIII - SPECIAL SECTION VI | L PROTECTION INFORMATION  Description of this product may chan e, you should consult the govern  PROTECTION INFORMATION  Other (Specify): Ine operation generates dust in elements of the period of the consult of the c | excess of allowab<br>Resistant () (refractory product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | having jurisdi                     | etian fi |
| Incompatability (material Hazardous decomposition Hazardous Polymorization  Most refractory products disposal procedures may disposal information.  COMMENTS:  RESPIRATORY PROTECTION VENTILATION: Local exhol PROTECTIVE GLOVES (CI EYE PROTECTION: Appro                                                                              | SECTION VIII - SP!  SECTION VIII - SP!  may be landfilled. However, since your app vary with: locale and are subject to chang  SECTION VIII - SPECIA  ON (CHECK TYPE): Approved Dust pust ventilation should be provided if routi HECK TYPE): Acid Resistant  wed safety glasses, goggles or faceshields  ECK TYPE): A Metatarsal safety  SECTION IX - S  SECTION IX - S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | L PROTECTION INFORMATION  Description of this product may chan e, you should consult the govern  PROTECTION INFORMATION  Other (Specify): Ine operation generates dust in elements of the period of the consult of the c | excess of allowab<br>Resistant () (refractory product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | having jurisdi                     | etian fi |

#### 5/13/91 MATERIAL SAFETY DATA SHEET

A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 TELEPHONE NUMBER -- 314-473-3626

#### SECTION I

PRODUCT NAME:

SUPER G SUPER C Plus SUPER G J SUPER G J Plus

SUPER-G-CC (Canada)

PRODUCT TYPE:

Plastic Refractory

CHEMICAL FAMILY:

FORMULA: Not applicable

NOTE:

The above listed products differ in one or more physical characteristics but are chemically equivalent. Information given in Sections II through IX of this Material Safety Data Sheet applies to each product listed.

#### SECTION II

#### PRODUCT HAZARDOUS INGREDIENTS

TLV-TWA

CAS #

Quartz (SiO\_\_)

0.1 mg/m 3 \*

14808-60-7

(1-4%)

Respirable Dust

Cristobalite (8102)

0.05 mg/m<sup>3\*</sup>

14464-46-1

(3-10%)

Respirable Dust

\*Source: American Conference of Governmental Industrial Hygienists, 1990-1991.

#### SECTION III

#### PHYSICAL DATA

SOLUBILITY IN WATER:

Slight

SPECIFIC GRAVITY:

MELTING POINT: Not Applicable

APPEARANCE AND ODOR:

Buff to gray granular solid; no odor

#### SECTION IV

#### FIRE AND EXPLOSION HAZARD DATA

PLASH POINT:

None

EXTINGUISHING MEDIA:

. Not Combustible

SPECIAL FIRE FIGHTING PROCEDURES:

None Known.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

#### SECTION V

#### HEALTH HAZARD DATA

#### EFFECT OF OVEREXPOSURE:

EYES

ACUTE: Dust or aggregate particles can cause mechanical irritation.

CHRONIC: None known.

SKIN

ACUTE: Can cause mechanical abrasion.

CHRONIC: None known.

INHALATION

ACUTE: Dust, if present, may cause upper respiratory irritation. CHRONIC: Dust may cause lung damage if inhaled on a long-term basis.

INGESTION

ACUTE: Unknown.

CHRONIC: Unknown.

Date: 04/03/98 Nos. 5740, 4734

### A. P. GREEN REFRACTORIES, INC. and Subsidiaries GREEN BOULEVARD, MEXICO, MO 65265

Emergency Telephone Number — Call 573-473-3626 Transportation Emergencies — Contact CHEMTREC at 800-424-9300 International Emergencies — Contact CHEMTREC at 703-527-3887 Health Emergencies — Contact Your Local Poison Center

#### SECTION I

**PRODUCT NAME:** 

GREENCAST®-19-L

**CASTABLE MIX 219** 

GREENCAST®-19-L Plus

**CASTABLE MIX 219 Plus** 

PRODUCT TYPE:

Castable Refractory

Canadian WHMIS Classification: D,2

NFPA Rating: 1-0-0

**CHEMICAL FAMILY:** 

SiO2 = 22-26%

 $Al_2O_3 = 28-32\%$ 

 $Fe_2O_3 = 11-12\%$ 

FORMULA: Not Applicable

CaO = 20-23%MgO = 10-11%

#### **SECTION II** PRODUCT HAZARDOUS INGREDIENTS

| CHEMICAL                   | <u>TLV-TWA</u>                | CAS#       |
|----------------------------|-------------------------------|------------|
| Vermiculite<br>(35-45%)    | 10 mg/m³*<br>Total Dust       | 1318-00-9  |
| Diatomaceous Earth (<5%)   | 10 mg/m³*<br>Total Dust       | 61790-53-2 |
| Quartz ( $SiO_2$ ) (<2%)   | 0.1 mg/m³*<br>Respirable Dust | 14808-60-7 |
| Refractory Cement (45-55%) | None (See Section IV)         | 12005-57-1 |

<sup>\*</sup>Source: American Conference of Governmental Industrial Hygienists, 1997.

#### SECTION III **HAZARDS INFORMATION**

This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as Group 1. The agency states there is sufficient evidence of carcinogenicity in humans. Reference: IARC Monograph 68.

04/03/98

Dust from product at any stage of its use or during tear-out after service may, especially on long exposure, lead to lung disease unless respiratory protection is employed. NIOSH approved respirators should be worn any time that refractories are torn out after service. While a respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

#### SECTION IV **FIRST AID MEASURES**

#### **EFFECT OF OVEREXPOSURE:**

EYES:

ACUTE:

Dust can cause mechanical irritation. Product's cement can cause eye

irritation.

CHRONIC:

None Known

SKIN:

ACUTE:

Product's cement can cause skin irritation.

CHRONIC:

None Known

**INHALATION: ACUTE:** 

Dust generated can cause breathing discomfort or irritation.

CHRONIC:

Long-term exposure to dust may cause lung damage.

INGESTION:

ACUTE:

Unknown

CHRONIC:

Unknown

#### **FIRST AID MEASURES:**

EYES:

Flush with clean water for 15 minutes. If irritation occurs, consult physician.

<u>SKIN</u>:

Wash with soap and water. If irritation occurs, consult physician.

**INHALATION:** Remove to fresh air. Seek medical attention.

INGESTION:

Contact physician immediately. Do not induce vomiting unless instructed to do so by

physician. Product is non-toxic as supplied, but its abrasive nature could damage

internal organs.

#### SECTION V FIRE FIGHTING MEASURES

**FLAMMABLE PROPERTIES:** 

None

**EXTINGUISHING MEDIA:** 

Not Combustible

**FIRE FIGHTING INSTRUCTIONS:** 

No special instructions.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

#### SECTION VI **ACCIDENTAL RELEASE MEASURES**

SMALL/LARGE SPILL: If dry, predampen and sweep or shovel up. If wet (after mixing with water for

use), sweep or shovel up and place in a container for disposal.

04/03/98

#### SECTION VII HANDLING AND STORAGE

Store in a dry place. Product is non-flammable.

# SECTION VIII EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: General mechanical ventilation is usually adequate (SECTION II).

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when working around dried material

and when removing this product after service.

**EYE PROTECTION:** Goggles or safety glasses with side shields should be worn.

**SKIN PROTECTION:** Gloves and long-sleeved and long-legged clothing should be worn to

prevent skin contact.

OTHER: Safety shoes should be worn to prevent foot injury from accidentally

dropped bags of castable.

# SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Gray, Granular Mixture

**BOILING POINT:** 

Not Applicable

pH:

9-11

**SOLUBILITY IN WATER:** 

None

ODOR:

None

SPECIFIC GRAVITY:

0.5

**MELTING POINT:** 

Not Applicable

# SECTION X STABILITY AND REACTIVITY

Product is stable under normal conditions of use, storage, and transportation.

Product can react with concentrated acids.

# SECTION XI TOXICOLOGICAL INFORMATION

LD<sub>50</sub> or LC<sub>50</sub> for oral, dermal, or inhalation routes of administration: no data for product.

# SECTION XII ECOLOGICAL INFORMATION

Ecotoxicological/chemical fate information: not available.

# SECTION XIII DISPOSAL CONSIDERATIONS

<u>As supplied</u>, product may be disposed of in an approved landfill, in accordance with federal, state, and local regulations.

04/03/98

Supplier can make no statement concerning disposal of used product, since product may become contaminated by hazardous materials during use.

#### **SECTION XIV TRANSPORT INFORMATION**

U.S.A. DOT:

Not Regulated

Canadian TDG Hazard Class & PIN:

Not Regulated

#### SECTION XV **REGULATORY INFORMATION**

TSCA Status: All Components Listed Canadian DSL: All Components Listed-

SARA Title III, Section 313: This MSDS provides the toxic chemical "SUPPLIER INFORMATION" required under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372. Toxic chemical information, if applicable to the product(s) named, is located in Section II - HAZARDOUS INGREDIENTS section of the MSDS. This information is subject to the toxic chemical reporting requirements of Section 313 and must be included in all MSDSs that are copied and distributed for this product.

#### **SECTION XVI OTHER INFORMATION**

MSDS Status: Replaces MSDS Dated 09/26/97

Note: This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Refractories, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By:

Larry L. Lorensen

Quality Engineer

Phone: 573-473-3427

JH:\MSDS\CURRENT\GC19L048

#### A. P. GREEN INDUSTRIES, INC. GREEN BOULEVARD, MEXICO, MO. 65265 TELEPHONE NUMBER -- 314-473-3626

#### SECTION I

PRODUCT NAME:

G-20, G-23, R-6023, R-8024

PRODUCT TYPE:

Insulating Refractory Bricks Or Shapes

CHEMICAL FAMILY:

SiO 2 = 54-59% Al 203 = 33-40% Fe 2 3 = 1-2% NaKO = 1-2%

FORMULA: Not Applicable

SECTION II

PRODUCT HAZARDOUS INGREDIENTS

CHEMICAL

TLV-TWA

CAS #

Cristobalite (SiO >)\*

0.05 mg/m 3 \* \*

14464-46-1

Respirable Dust

Quartz (S102)\*

0.1 mg/m 3 \* \* Respirable Dust

14808-60-7

\* Not mechanically separate from each other or from other mineralogical phases in product as supplied.

\*\* Source: American Conference of Governmental Industrial Hygienists, 1991-1992.

SECTION III

PHYSICAL DATA

SOLUBILITY IN WATER:

VOLATILES BY VOLUME (%): None

SPECIFIC GRAVITY:

1.6-1.9

MELTING POINT: Not Applicable

APPEARANCE AND ODOR:

Buff solid; no odor

SECTION IV

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:

None

EXTINGUISHING MEDIA:

Not Combustible

SPECIAL FIRE FIGHTING PROCEDURES:

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known

SECTION V

HEALTH HAZARD DATA

EFFECT OF OVEREXPOSURE:

EYES

ACUTE: Dust or chips can cause machanical irritation.

CHRONIC: None known.

SKIN

ACUTE: Can cause mechanical abrasion or cuts.

CHRONIC: None known.

INHALATION

ACUTE: Dust, if present, may cause upper respiratory irritation.

CHRONIC: Dust may cause lung damage if inhaled on a long-term basis.

INCESTION

ACUTE: Unknown.

CHROMIC: Unknown.

Material Safety Data Sheet Proguet: G-20, G-23

SECTION V (CONTINUED)

#### EMERGENCY AND FIRST AID PROCEDURES:

EYES

Immediately flush with water for 15 minutes. Consult physician if irritation occurs.

SKIN

Treat abrasions or cuts using normal first aid procedures.

INHALATION

Remove to fresh air. Seek medical attention.

INGESTION

Contact physician immediately. Do not induce vomiting unless instructed to do so by physician. Product is non-toxic as supplied, but its abrasive nature could damage internal organs.

internal organs.

SECTION VI

REACTIVITY DATA

STABILITY:

Stable

C 교통교육교육 등록 하는 하는 등록 등로 하는 등 등로 포함 등록 등록 보고 모르고 모르고 모르고 모르고 등을 등 등 등 등

INCOMPATIBILITY:

None known.

HAZARDOUS POLYMERIZATION:

Will not occur.

STORY OF S

SECTION VII

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: For broken shapes or fragments, sweep, shovel up, or pick up.

WASTE DISPOSAL METHOD: Can be disposed of in an approved landfill, in accordance with local, state, and federal regulations.

SECTION VIII

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use a NIOSH approved respirator when cutting or when removing this product after service.

**VENTILATION:** General mechanical ventilation is adequate.

EYE PROTECTION: Goggles or safety glasses with side shields should be worn. Entry of chips into the eyes is a serious hazard, and eye protection should be worn at all times.

OTHER PROTECTION: Use of leather gloves and long-sleeved and long-legged clothing protects hands, arms, and legs from cuts or skin abrasion. Safety shoes should be worn to protect feet from accidentally dropped bricks or shapes.

. .

SECTION IX

SPECIAL PRECAUTIONS

Warning: This product contains crystalline silica. Prolonged exposure to dust may cause silicosis, a progressive pneumoconiosis, or other respiratory diseases. International Agency for Research on Cancer (IARC) has classified crystalline silica as a Class 2A carcinogen. Their study concluded that sufficient evidence for carcinogenicity exists in experimental animals and that limited evidence for carcinogenicity exists in humans.

NIOSH approved respirators should be worn any time that refractories are torn out after service. While some respiratory hazard and/or nuisance dust may exist from the product itself, other foreign substances may warrant additional precautions during tearout and disposal.

This material safety data sheet centains confidential proprietary information and is not to be disclosed to the general public or to competition except as required by law. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Industries, Inc. or not. This information is offered solely for use in your evaluation of this product in respect to safety, health, and environmental hazards.

Prepared By: Ellis J. Smith

Title: Senior Technical Consultant

Phone: (314) 473-3392



#### Lime Products

#### Calcium Oxide (Quicklime, Pebble Lime)

A highly reactive product, averaging over 94% calcium oxide. Available in an assortment of sizes for a wide range of applications. Available in bulk, super sacks, and 50 lb., multiwall paper bags with plastic moisture barrier film.

## Calcium Hydroxide (Hydrated Lime, Kemilime<sup>®</sup>, Snowflake<sup>®</sup>)

A high purity, finely processed product, 99% of which will pass through a 200 mesh screen. It is air separated to eliminate grit. Low moisture content (< 1%) prevents caking. Shipped in bulk, supersacks and in 10 lb., 35 lb., or 50 lb. Bags. Three-ply paper bags, can be ordered with, or without, a plastic liner for extra protection.

## Ground Limestone (Calcium Carbonate, Limestone Flour)

A finely ground, low moisture product. For use in chemical, industrial, environmental and agricultural applications where high calcium content is required. Available in bulk.

## Agricultural Lime (Calcium Carbonate)

A finely ground, low moisture product, which exhibits a higher pH than ground limestone and yields quicker neutralizing ability. For use in chemical, industrial, and agricultural applications where high calcium content is required. Available in bulk.

#### **Ground Dolomite**

A finely ground, low moisture product, for applications which require a high magnesium content. For use in chemical, industrial, and agricultural applications where high calcium content is required. Available in bulk.

#### **Dolomitic Rock**

Crushed, commercial grade dolomite. Typically 44% MgCO<sub>3</sub> and 56% CaCO<sub>3</sub>. Available in bulk.

#### **Commercial Limestone**

A high calcium grade of sized commercial limestone. For use in construction and building, chemical, iron and steel markets. Available in bulk.



Typical Analysis Data Sheet

# Calcium Oxide (Quicklime)

## **Chemical Properties**

Reactivity (1:4 lime to water ratio)

| 30 second temperature rise | 40 °C |
|----------------------------|-------|
| 3 minute temperature rise  | 56 °C |
| Total temperature rise     | 58 ℃  |

|                              |                   | Percent by Weight |
|------------------------------|-------------------|-------------------|
| Calcium Oxide, Available     | CaO               | 94.1              |
| Calcium Oxide, Total         | CaO               | 96.7              |
| Magnesium Oxide              | MgO               | 1.07              |
| Silicon Dioxide              | SiO <sub>2</sub>  | 1.11              |
| Aluminum Oxide               | $Al2O_3$          | 0.32              |
| Ferric Oxide                 | $Fe_2O_3$         | 0.41              |
| Sulfur (as SO <sub>3</sub> ) |                   | 0.23              |
| Sodium Oxide                 | Na <sub>2</sub> O | 0.07              |
| Potassium Oxide              | K <sub>2</sub> O  | 0.05              |
| Manganese Oxide              | MnO               | 0.029             |
| Total acid insoluble         |                   | 0.55              |
| Loss On Igniton @ 1000 °C    |                   | 1.5               |

<sup>\*\*</sup> Product meets all ASTM and AWWA requirements. \*\*

# Calcium Oxide (Quicklime)

## **Physical Properties**

## 3/4" x 3/8" Calcium Oxide (Screened Pebble Quicklime)

|              | Percent Passing            |
|--------------|----------------------------|
| US 3/4"      | 96.3                       |
| US 5/8"      | 80.0                       |
| US 1/2"      | 42.9                       |
| US 3/8"      | 19.0                       |
| US 1/4"      | 3.5                        |
| US 1/8"      | 2.0                        |
| Bulk Density | 60.8 lbs./ft. <sup>3</sup> |

## 3/4" x 3/8" Calcium Oxide (Pebble Quicklime)

|         | Percent Passing |
|---------|-----------------|
| US 3/4" | 96.8            |
| US 5/8" | 86.1            |
| US 1/2" | 63.4            |
| US 3/8" | 30.9            |
| US 1/4" | 1 <b>4.</b> 7   |
| US 1/8" | 9.5             |
|         |                 |

Bulk Density 68.6 lbs./ft.<sup>3</sup>

## 3/8" x 1/8" Calcium Oxide (Quicklime)

|              | Percent Passing |
|--------------|-----------------|
| US 3/8"      | 99.8            |
| US 1/4"      | 61.7            |
| US 1/8"      | 12.6            |
| Bulk Density | 60.7 lbs./ft    |

## 1/8" Minus Calcium Oxide (Quicklime)

|                  | Nominal | Percent Passing            |
|------------------|---------|----------------------------|
| US No. 6         | 0.132"  | 100.0                      |
| US No. 12        | 0.0661" | 88.3                       |
| US No. 20        | 0.0331" | 68.8                       |
| US No. 40        | 0.0165" | 57.5                       |
| US No. 60        | 0.0098" | 52.2                       |
| US No. 100       | 0.0059" | 41.1                       |
| US No. 200       | 0.0029" | 36.2                       |
| Apparent Loose I | Density | 67.4 lbs./ft. <sup>3</sup> |
| Apparent Packed  |         | 78.0 lbs./ft. <sup>3</sup> |

<sup>\*\*</sup> Product meets all ASTM and AWWA requirements. \*\*



Typical Analysis Data Sheet

# Calcium Hydroxide (Hydrated Lime)

## **Chemical Properties (weight percent)**

| Available Calcium Hydroxide; Ca(OH) <sub>2</sub> | 97.0 |
|--------------------------------------------------|------|
| Equivalent Calcium Oxide; CaO                    | 73.4 |
| Free Calcium Oxide                               | 0.73 |
| Chemically Combined Water                        | 23.6 |
| Mechanical Moisture                              | 0.63 |

| Blaine Fineness         | $16,907 \text{ cm}^2/\text{g}$ |
|-------------------------|--------------------------------|
| Percent Passing US #200 | 99.29                          |
| Percent Passing US #325 | 93.59                          |
| Apparent Loose Density  | 22.52 lbs/ft <sup>3</sup>      |
| Apparent Packed Density | 36.30 lbs/ft <sup>3</sup>      |

<sup>\*\*</sup> Product meets all ASTM and AWWA requirements. \*\*

# Calcium Hydroxide (Hydrated Lime)

Typical Analysis Data Sheet

# **Chemical Properties - TRACE ANALYSIS**

| Aluminum Oxide              | $Al_2O_3$                      | 0.24   | %   |
|-----------------------------|--------------------------------|--------|-----|
| Calcium Carbonate           | CaCO <sub>3</sub>              | 1.40   | %   |
| Carbon Dioxide              | CO <sub>2</sub>                | 0.70   | %   |
| Calcium Sulphate            | CaSO <sub>4</sub>              | 0.02   | %   |
| Ferric Oxide                | Fe <sub>2</sub> O <sub>3</sub> | 0.05   | %   |
| Magnesium Hydroxide         | $Mg(OH)_2$                     | 0.26   | %   |
| Silicon Dioxide             | SiO <sub>2</sub>               | 0.60   | %   |
| Sulfur (as SO <sub>3)</sub> | -                              | 0.01   | %   |
|                             |                                |        |     |
| Arsenic                     | As                             | 6      | ppm |
| Beryllium                   | Be                             | 0.4    | ppm |
| Cadmium                     | Cd                             | < 0.5  | ppm |
| Chromium                    | Cr                             | 1.1    | ppm |
| Copper                      | Cu                             | 10     | ppm |
| Fluorine                    | F                              | 55     | ppm |
| Lead                        | Pb                             | < 2    | ppm |
| Manganese                   | Mn                             | 120    | ppm |
| Mercury                     | Hg                             | < 0.25 | ppm |
| Nickel                      | Ni                             | 1.2    | ppm |
| Selenium                    | Se                             | < 5    | ppm |
| Zinc                        | Zn                             | 42     | ppm |
|                             |                                |        |     |

<sup>\*\*</sup> Product meets all ASTM and AWWA requirements. \*\*



Typical Analysis Data Sheet

# Ground Limestone (Calcium Carbonate, Limestone Flour)

# **Chemical Properties (weight percent)**

| Calcium Carbonate            | CaCO <sub>3</sub> | 91.7      |
|------------------------------|-------------------|-----------|
| Magnesium Oxide              | $MgCO_3$          | 3.09      |
| Silicon Dioxide              | SiO <sub>2</sub>  | 3.36      |
| Aluminum Oxide               | $Al2O_3$          | 0.45      |
| Ferric Oxide                 | $Fe_2O_3$         | 0.55      |
| Sulfur (as SO <sub>3</sub> ) |                   | 0.34      |
| Sodium Oxide                 | Na <sub>2</sub> O | 0.04      |
| Potassium Oxide              | K <sub>2</sub> O  | 0.09      |
| Manganese Oxide              | MnO               | 0.016     |
| Calcium Carbonate Equiv      | alent             | 97.8 %    |
| Moisture Content             |                   | 0.40 %    |
| Oregon Lime Score            |                   | 95        |
| pН                           |                   | 7.5 - 8.5 |

| Passing US # 10         | 100 %                   |
|-------------------------|-------------------------|
| Passing US # 20         | 99 %                    |
| Passing US # 40         | 98 %                    |
| Passing US # 100        | 95 %                    |
| Passing US # 200        | 89 %                    |
| Apparent Loose Density  | 74 lbs./ft <sup>3</sup> |
| Apparent Packed Density | 98 lbs./ft <sup>3</sup> |

ag.Esc



# RIVERGATE LIME PLANT Portland, Oregon

Typical Analysis Data Sheet

# **Agricultural Lime**

# **Chemical Properties (weight percent)**

| Calcium Carbonate            | CaCO <sub>3</sub>              | 90 - 100 |
|------------------------------|--------------------------------|----------|
| Calcium Oxide                | CaO                            | 0 - 10   |
| Calcium Hydroxide            | Ca(OH) <sub>2</sub>            | 0 - 10   |
| Magnesium Oxide              | $MgCO_3$                       | 3.09     |
| Silicon Dioxide              | $SiO_2$                        | 3.36     |
| Aluminum Oxide               | Al2O <sub>3</sub>              | 0.45     |
| Ferric Oxide                 | Fe <sub>2</sub> O <sub>3</sub> | 0.55     |
| Sulfur (as SO <sub>3</sub> ) |                                | 0.34     |
| Sodium Oxide                 | Na <sub>2</sub> O              | 0.04     |
| Potassium Oxide              | K <sub>2</sub> O               | 0.09     |
| Manganese Oxide              | MnO                            | 0.016    |
| Calcium Carbonate Equiv      | valent                         | 97.8 %   |
| Moisture Content             |                                | 0.40 %   |
| Oregon Lime Score            |                                | 94       |
| pН                           |                                | 8 - 12.4 |

| Passing US # 10         | 100 %                   |
|-------------------------|-------------------------|
| Passing US # 20         | 98 %                    |
| Passing US # 40         | 93 %                    |
| Apparent Loose Density  | 74 lbs./ft <sup>3</sup> |
| Apparent Packed Density | 98 lbs./ft <sup>3</sup> |



Typical Analysis Data Sheet

# **Ground Dolomite**

# **Chemical Properties (weight percent)**

| Calcium Carbonate            | CaCO <sub>3</sub> | 55     |
|------------------------------|-------------------|--------|
| Magnesium Carbonate          | $MgCO_3$          | 44     |
| Silicon Dioxide              | SiO <sub>2</sub>  | 1.74   |
| Aluminum Oxide               | $Al_2O_3$         | 0.42   |
| Ferric Oxide                 | $Fe_2O_3$         | 0.28   |
| Sulfur (as SO <sub>3</sub> ) |                   | 0.00   |
| Sodium Oxide                 | Na <sub>2</sub> O | 0.02   |
| Potassium Oxide              | K <sub>2</sub> O  | 0.00   |
| Calcium Carbonate Equiva     | ılent             | 104 %  |
| Moisture Content             |                   | 0.27 % |
| Oregon Lime Score            |                   | 102    |
| pН                           |                   | 8      |

| Passing US # 10         | 100 %                    |
|-------------------------|--------------------------|
| Passing US # 20         | 99 %                     |
| Passing US # 40         | 95 %                     |
| Apparent Loose Density  | 85 lbs./ft <sup>3</sup>  |
| Apparent Packed Density | 142 lbs./ft <sup>3</sup> |



Typical Analysis Data Sheet

# **Dolomitic Rock**

## **Chemical Properties (weight percent)**

| Calcium Carbonate               | CaCO <sub>3</sub>              | 55         |
|---------------------------------|--------------------------------|------------|
| Magnesium Carbonate             | $MgCO_3$                       | 44         |
| Silicon Dioxide                 | $SiO_2$                        | 1.74       |
| Aluminum Oxide                  | $Al_2O_3$                      | 0.42       |
| Ferric Oxide                    | Fe <sub>2</sub> O <sub>3</sub> | 0.28       |
| Sulfur (as SO <sub>3</sub> )    |                                | 0.00       |
| Sodium Oxide                    | Na <sub>2</sub> O              | 0.02       |
| Potassium Oxide                 | K <sub>2</sub> O               | 0.00       |
| Calcium Carbonate Equivalent pH |                                | 104 %<br>8 |

| Passing US 5/8" | 100 %                     |
|-----------------|---------------------------|
| Passing US 1/2" | 99.8 %                    |
| Passing US 3/8" | 92.6 %                    |
| Passing US 1/4" | 43.0 %                    |
| Passing US 1/8" | 17.5 %                    |
| Bulk Density    | 97.5 lbs./ft <sup>3</sup> |



Typical Analysis Data Sheet

# **Commercial Limestone (Chemical Grade Calcium Carbonate)**

## **Chemical Properties (weight percent)**

| Calcium Carbonate            | CaCO <sub>3</sub> | 98.3  |
|------------------------------|-------------------|-------|
| Magnesium Oxide              | MgO               | 0.46  |
| Silicon Dioxide              | $SiO_2$           | 0.62  |
| Aluminum Oxide               | $Al_2O_3$         | 0.18  |
| Ferric Oxide                 | $Fe_2O_3$         | 0.23  |
| Sulfur (as SO <sub>3</sub> ) |                   | 0.14  |
| Sodium Oxide                 | Na <sub>2</sub> O | 0.04  |
| Potassium Oxide              | K <sub>2</sub> O  | 0.03  |
| Manganese Oxide              | MnO               | 0.016 |

## **Physical Properties**

| Loss On Ignition | 43.3 %                 |
|------------------|------------------------|
| Bulk Density     | 90 lbs/ft <sup>3</sup> |

## Large Limestone Sizing

| Percent Passing US 2 1/2" | 100 % |
|---------------------------|-------|
| Percent Passing US 1"     | 10 %  |

# **Small Limestone Sizing**

| Percent Passing US 1"   | 100 % |
|-------------------------|-------|
| Percent Passing US 3/8" | 10 %  |

MATERIAL SAFETY DATA SHEET Rev. 04B For Coating, Resins, and Related Materials NPCA 1-84 Manufacturer's Name Emergency Telephone No. BENJAMIN MOORE & CO. 800-424-9300 (CHEMTREC) 51 CHESTNUT RIDGE RD MONTVALE, NJ 07645 Date Prepared Last Rev Date Information Telephone No. 01-19-01 06-01-00 201-573-9600 For the most up-to-date MSDS information please visit our website www.benjaminmoore.com/msds/go.html SECTION I - PRODUCT ID \*\* HMIS CODE \*\* PRODUCT\*: 184, n184 HEALTH: 1 CLASS: WATER THINNED PAINT FLAMMABILITY: 0 NAME: MOORCRAFT SUPER SPEC 100% ACRYLIC EXTERIOR SATIN REACTIVITY: 0 PERSONAL PROT: \*\* SARA TITLE 312 \*\* ACUTE: N CHRONIC: N FIRE: N PRESSURE: N REACTIVITY: N For a complete description of HMIS and an explanation of the PERSONAL PROT: code, see Section XX. \*NOTE: In the PRODUCT code a little n can be any capital letter of the alphabet except P or Q. SECTION II HAZARDOUS INGREDIENTS INGREDIENT HAZ SARA MAX % CAS #  ${f T}{f L}{f V}$  $\mathtt{PEL}$ STEL CEIL \_\_\_\_\_ Zinc Oxide Y 2.6 001314-13-2 10 mg/M3 10 mg/M3 N/E N/E N/A Titanium Dioxide 14.4 013463-67-7 10 mg/M3 10 mg/M3 N/E N/E Hydrous Alum Silicates Y N 6.1 001332-58-7 10 mg/M3 10 mg/M3 N/E N/E Iron Oxide Y N 15.1 001332-37-2 5 mg/M3 10 mg/M3 N/E N/E N/A C.I. Pigment Black 7 N .4 001333-86-4  $3.5 \text{mg/M3} \ 3.5 \text{mg/M3} \ \text{N/E}$ N/E \*\*\*\*\*\*\*\*\*\*\*\*\*\* This product contains one or more reported carcinogens or suspected carcinogens which are noted NTP, IARC, or OSHA-Z in the other limits recommended column. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Note: This product contains pigments which may become a dust nuisance when removed by abrasive blasting, sanding, or grinding. This product may contain small amounts of materials known to the State of California to cause cancer and reproductive harm. \_\_\_\_\_\_ SECTION III PHYSICAL DATA

MSDS #: 184, n184 Page 2

BOILING RANGE: N/A WT/GALLON: 9.1 to 10.1 % VOL BY VOLUME: 71.7 to 72.1 EVAPORATION RATE: SLOWER THAN ETHER VAPOR DENSITY: HEAVIER THAN AIR \_\_\_\_\_ SECTION IV FIRE AND EXPLOSION HAZARD DATA ------D.O.T. FLAMMABILITY CLASS.: NOT REGULATED FLASH POINT: > 250 F PMCC LEL: Not Applicable EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL WATER FOG UNUSUAL FIRE AND EXPLOSION HAZARDS: Toxic gases may form when product burns. Closed containers may burst if exposed to extreme heat or fire. SPECIAL FIRE FIGHTING PROCEDURES: Cool exposed containers with water. Use self-contained breathing apparatus. \_\_\_\_\_\_ SECTION V HEALTH HAZARD DATA \_\_\_\_\_\_ EFFECTS OF OVEREXPOSURE - ACUTE: Inhalation - Causes nose and throat irritation. Contact - Causes eye irritation. Ingestion of large amounts could cause serious injury. EFFECTS OF OVEREXPOSURE - CHRONIC: IARC has classified Carbon Black as possibly carcinogenic for humans (2B). MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: None expected when used in accordance with Safe Handling and Use Information (Section VIII). PRIMARY ROUTE(S) OF ENTRY: DERMAL INHALATION INGESTION EMERGENCY AND FIRST AID PROCEDURES : Inhalation - Remove to fresh air. Get medical help for any breathing difficulty. Eye Contact - Flush thoroughly with water. Call physician. Skin Contact - Wash with soap and water. Ingestion - Drink 1 or 2 glasses of water to dilute. DO NOT induce vomiting. Call physician. -----SECTION VI REACTIVITY DATA \_\_\_\_\_\_ STABILITY: STABLE HAZARDOUS POLYMERIZATION WILL NOT OCCUR CONDITIONS TO AVOID: Elevated temperatures HAZARDOUS DECOMPOSITION PRODUCTS: Burning may produce carbon dioxide and carbon monoxide. INCOMPATABILITY (MATERIALS TO AVOID): None reasonably foreseeable. SECTION VII SPILL OR LEAK PROCEDURES STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Flush with water. Absorb with sawdust or rags. WASTE DISPOSAL METHOD: Conventional procedures in compliance with local, state and federal regulations. Do not incinerate sealed containers. SECTION VIII SAFE HANDLING AND USE INFORMATION RESPIRATORY PROTECTION: Use NIOSH approved respirator specified for protection against paint spray mist and sanding dust in restricted or confined areas. **VENTILATION:** 

Adequate to maintain working atmosphere below T.L.V. and L.E.L.

MSDS #: 184, n184 Page 3

(See Sect. II for ingredient data and concentrations). Mechanical exhaust may be required in confined areas.

PROTECTIVE GLOVES: Waterproof during repeated contact.

EYE PROTECTION: Splash goggles or safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT: Clothing adequate to protect skin.

HYGIENIC PRACTICES:

Remove and wash clothing before reuse. Wash hands before eating, smoking or using the washroom.

\_\_\_\_\_

#### SECTION IX SPECIAL PRECAUTIONS

-----

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Do not throw or drop containers.

OTHER PRECAUTIONS :

Avoid contact with eyes and prolonged contact with skin or breathing of spray mist or sanding dust.

Close container after each use. Keep out of reach of children. Do not take internally.

\_\_\_\_\_\_

#### SECTION XX

HMIS (Hazardous Materials Identification System) (R) NPCA HMIS is a recognized workplace Hazard Communications System as required by OSHA (29 CFR 1910.1200). Information on establishing a compliant hazardous communication program using HMIS is available from:

American Labelmark Co., Inc., Labelmaster Division 5724 N. Pulaski Rd., Chicago, IL 60646 1-800-621-5808

The ratings assigned by Benjamin Moore & Co. are only suggested ratings; the contractor/employer has ultimate responsibility for HMIS rating where this system is used.

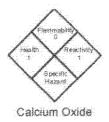
PERSONAL PROTECTION: This code is left blank on Benjamin Moore & Co. MSDS's as it depends on application technique and the workplace ventilation. Please read Sections II through IX of this MSDS before deciding on appropriate protective equipment and beginning work. There are codes available for this section which can be obtained from Labelmaster. This product contains at least one toxic chemical listed in Section II that is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372.

#### DISCLAIMER

The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. This information is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. Any use of this data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

NOTICE: Removal of old paint by sanding, scraping or other means may generate dust or fumes which contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For additional information,

contact the USEPA/Lead Information Hotline at 1-800-LEAD-FYI.





# **Material Safety Data Sheet** for Calcium Oxide

Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

Emergency Telephone Number:

(913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Trade Name and Synonyms:

Calcium oxide, CaO, quicklime, lime, unslaked lime

Pebble Quicklime, Cal-Max

CAS No.:

1305-78-8

Date Revised:

July 2000

# Section II - Hazardous Ingredients

|                            | CAS Number | OSHA PEL                                            | ACGIH TLV                |
|----------------------------|------------|-----------------------------------------------------|--------------------------|
| Quicklime, CaO             | 1305-78-8  | 5 mg/m <sup>3</sup>                                 | 2 mg/m <sup>3</sup>      |
| Quartz, crystalline silica | 14808-60-7 | PEL = 10mg/m <sup>3</sup><br>% SiO <sub>2</sub> *+2 | 0.05 mg/m <sup>3</sup> * |

Calcium oxide may contain greater than 0.1% quartz, crystalline silica. Chronic exposure above the allowed limit to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

ACGIH American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL TLV

Permissible Exposure Limit Threshold Limit Value

<sup>\*</sup>Respirable fraction

### Section III - Chemical and Physical Data

Chemical Family: Inorganic Base Evaporation Rate: Not Applicable

Molecular Weight: 56.10

Boiling Point: 5162°C
Melting Point: 4737°F

Specific Gravity: 3.2-3.4

Vapor Density: (Air=1) Not Applicable

Solubility in Water: 0.131 g/100 ml at 10°C, 0.07 g/100 ml at 80°C Appearance and Odor: White granular or powder, faint earthy odor

# Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable, calcium oxide is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable LEL: Not Applicable UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Calcium oxide in itself is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of calcium oxide can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents

**CAUTION:** Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

## Section V - Health Hazard Data

Calcium Oxide can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation, skin, eyes, ingestion

- 1. Inhalation: corrosive
  - a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
  - **b.** Chronic exposure: Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
  - c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- 2. Skin contact: corrosive
  - a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
  - b. Chronic exposure: A chronic dermatitis may follow repeated contact.
  - c. First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
  - a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

# Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

Section VII - Precautions for Safe Handling and Use -

Saturated solutions of calcium oxide ("Milk of Lime") can have pH of 12-12.49 at 25°C or above, corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact.

PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water or moisture.

Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

### Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability for protection against airborne calcium oxide.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of calcium oxide.

Work/Hygienic Practices: Immediately after working with calcium oxide, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

MATERIAL SAFETY DATA SHEET Rev. 04B For Coating, Resins, and Related Materials NPCA 1-84 Emergency Telephone No. Manufacturer's Name BENJAMIN MOORE & CO. 800-424-9300 (CHEMTREC) 51 CHESTNUT RIDGE RD MONTVALE, NJ 07645 Date Prepared Last Rev Date Information Telephone No. 09-05-00 201-573-9600 01-19-01 For the most up-to-date MSDS information please visit our website www.benjaminmoore.com/msds/go.html \_\_\_\_\_\_ SECTION I - PRODUCT ID \*\* HMIS CODE \*\* HEALTH: 4\* PRODUCT\*: M75, nM75 CLASS: SOLVENT THINNED PAINT FLAMMABILITY: 3 REACTIVITY: 1 NAME: ALIPHATIC URETHANE GLOSS HARDENER PERSONAL PROT: COLOR: ALL \*\* SARA TITLE 312 \*\* ACUTE: Y CHRONIC: Y FIRE: Y PRESSURE: N REACTIVITY: N For a complete description of HMIS and an explanation of the PERSONAL PROT: code, see Section XX. \*NOTE: In the PRODUCT code a little n can be any capital letter of the alphabet except P or Q. SECTION II HAZARDOUS INGREDIENTS INGREDIENT HAZ SARA MAX % CAS #  ${
m TLV}$ PEL STEL Aliphatic Polyisocyanate Y N 73.4 028182-81-2 0.5mg/M3 N/E 1.0mg/M3 N/E 7.5\*10-5 Hexamethylene Diisocyanate Y 1.6 000822-06-0 .005 PPM .005 PPM 0.02 PPM 0.02 PPM N/A \_\_\_\_ n-Butyl Acetate Y N 12.5 000123-86-4 150 ppm 150 ppm 200 ppm N/E \_\_\_\_\_ Xylene 10.0 001330-20-7 100 ppm 100 ppm 150 ppm N/E 21 @ 38C Ethyl Benzene 2.5 000100-41-4 100 ppm 100 ppm 125 ppm N/E \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* This product contains one or more reported carcinogens or suspected carcinogens which are noted NTP, IARC, or OSHA-Z in the other limits recommended column. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* This product may contain small amounts of materials known to the State of California to cause cancer and reproductive harm. \_\_\_\_\_\_ SECTION III PHYSICAL DATA BOIL RANGE: 315.0 to 395.0 WT/GL; 8.8 to 8.8 %VOL/VOL: 30.2 to 30.2 EVAPORATION RATE: SLOWER THAN ETHER VAPOR DENSITY: HEAVIER THAN AIR

Page 2 MSDS #: M75, nM75

#### SECTION IV FIRE AND EXPLOSION HAZARD DATA

D.O.T. FLAMMABILITY CLASS.: FLAMMABLE FLASH POINT: 91 F PMCC

LEL %: 1.0

EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL WATER FOG UNUSUAL FIRE AND EXPLOSION HAZARDS:

During a fire, HDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Closed containers may explode when exposed to extreme heat or burst when contaminated with water (CO2 evolved).

SPECIAL FIRE FIGHTING PROCEDURES:

Cool exposed containers with water. Use self-contained breathing apparatus. Do not use water stream on burning liquid. Use self-contained breathing apparatus.

### SECTION V HEALTH HAZARD DATA

\_\_\_\_\_\_

IMPORTANT: Designed to be mixed with other components. The resulting material will have the hazards of all its components.

EFFECTS OF OVEREXPOSURE - ACUTE:

Inhalation - May be fatal as a result of spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Contact - Causes eye burns.

Contact - Causes skin burns.

Skin Absorption - Hazardous ingredients contained in this product have the capacity to be absorbed through the skin in sufficient quantities to cause systemic toxicity. See Safe Handling and Use Information (Section VIII). Ingestion - Irritation of the digestive tract and nervous system depression (drowsiness, dizziness, loss of coordination and fatigue). Aspiration Hazard - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Ingestion - Harmful if swallowed. Irritation of the digestive tract and nervous system depression (drowsiness, dizziness, loss of coordination and fatique).

EFFECTS OF OVEREXPOSURE - CHRONIC:

Skin Contact - Prolonged or repeated exposure may cause dermatitis. NOTICE: Reports have associated permanent brain and nervous system damage with repeated, prolonged overexposure to solvents among persons engaged in the painting trade. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

IARC has classified Ethyl Benzene as possibly carcinogenic for humans (2B). May cause allergic skin reaction.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE:

Asthma and other respiratory disorders, skin allergies and eczema. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes and skin.

As a result of previous repeated overexposure or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to later exposure to isocyanate at levels well below the TLV. This increased lung sensitivity can persist for weeks and in some cases for several years. Chronic overexposure has been reported to cause lung damage and decreased lung function which may be permanent. HDI vapors or mist can irritate the mucous membranes. Persons with existing, nonspecific bronchial hyperactivity can respond to concentration below t he TLV with similar symptoms as well as an asthma attack. Exposures above TLV may lead to bronchitis, bronchial spasm and pulmonary edema. These

MSDS #: M75, nM75

effects are usually reversible.

Isocyanates react with skin protein and moisture and can cause irritation and may develop into dermatitis. Symptoms of skin irritation may be reddening, swelling, rash, scaling or blistering. Some persons may develop skin sensitization from contact.

PRIMARY ROUTE(S) OF ENTRY: DERMAL INHALATION INGESTION EMERGENCY AND FIRST AID PROCEDURES:

Inhalation - Remove from hazard area, maintain breathing, call physician. Skin Contact - Remove with soap and water.

Eye Contact - Flush immediately with large amounts of water. Call physician Ingestion - Drink 1 or 2 glasses of water to dilute.

DO NOT induce vomiting. Call physician.

\_\_\_\_\_\_

#### SECTION VI REACTIVITY DATA

STABILITY: This product is stable under normal conditions.

HAZARDOUS POLYMERIZATION: May occur, contact with moisture or other materials which react with isocyanates or temperatures over 400 F may cause polymerization.

HAZARDOUS DECOMPOSITION PRODUCTS:

High heat and fire may produce carbon dioxide, carbon monoxide, oxides of nitrogen, HCN, HDI.

CONDITIONS TO AVOID: Elevated temperatures and build up of vapors INCOMPATABILITY(MATERIALS TO AVOID): Water, amines, strong bases, alcohols, metal compounds and surface active materials.

#### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Remove all sources of ignition. Avoid breathing vapors. Use non-sparking tools to return materials to container. Absorb residue with Fullers earth. WASTE DISPOSAL METHOD:

Conventional procedures in compliance with local, state and federal regulations. Do not incinerate sealed containers.

#### SECTION VIII SAFE HANDLING AND USE INFORMATION

#### RESPIRATORY PROTECTION:

Wear a properly fitted respirator approved by NIOSH/MSHA during and after application. A positive-pressure, supplied air respirator (TC-19C) may be appropriate where airborne monitoring demonstrates vapor levels below ten times the applicable exposure limits. VENTILATION:

Adequate to maintain working atmosphere below T.L.V. and L.E.L.

(See Sect. II for ingredient data and concentrations). Mechanical exhaust may be required in confined areas.

Discharge exhaust only in area away from ignition sources.

PROTECTIVE GLOVES: Solvent impermeable gloves are required.

EYE PROTECTION : Splash goggles or safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT: Clothing adequate to protect skin.

HYGIENIC PRACTICES:

Remove and wash clothing before reuse. Wash hands before eating, smoking or using the washroom.

#### SECTION IX SPECIAL PRECAUTIONS

-----

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

MSDS #: M75, nM75

Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. At storage temperatures above 122 F, material may slowly polymerize without hazard. Ideal storage temp. range is 50-81 F. Avoid contact with skin and eyes. OTHER PRECAUTIONS:

If container is exposed to high heat, it can be pressurized and possibly rupture explosively. HDI reacts slowly with water to form CO2 gas. This gas can cause sealed containers to expand and possibly rupture explosively. Keep out of reach of children. Do not take internally.

#### SECTION XX

HMIS (Hazardous Materials Identification System) (R) NPCA HMIS is a recognized workplace Hazard Communications System as required by OSHA (29 CFR 1910.1200). Information on establishing a compliant hazardous communication program using HMIS is available from:

American Labelmark Co., Inc., Labelmaster Division 5724 N. Pulaski Rd., Chicago, IL 60646 1-800-621-5808

The ratings assigned by Benjamin Moore & Co. are only suggested ratings; the contractor/employer has ultimate responsibility for HMIS rating where this system is used.

PERSONAL PROTECTION: This code is left blank on Benjamin Moore & Co. MSDS's as it depends on application technique and the workplace ventilation. Please read Sections II through IX of this MSDS before deciding on appropriate protective equipment and beginning work. There are codes available for this section which can be obtained from Labelmaster. This product contains at least one toxic chemical listed in Section II that is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372.

### DISCLAIMER

The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. This information is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. Any use of this data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

NOTICE: Removal of old paint by sanding, scraping or other means may generate dust or fumes which contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For additional information, contact the USEPA/Lead Information Hotline at 1-800-LEAD-FYI.

MATERIAL SAFETY DATA SHEET Rev. 06B For Coating, Resins, and Related Materials NPCA 1-84 Emergency Telephone No. Manufacturer's Name BENJAMIN MOORE & CO. 800-424-9300 (CHEMTREC)

51 CHESTNUT RIDGE RD

MONTVALE, NJ 07645

Date Prepared Last Rev Date Information Telephone No. 01-19-01 09-05-00 201-573-9600

For the most up-to-date MSDS information please visit our website www.benjaminmoore.com/msds/go.html

\_\_\_\_\_

### SECTION I - PRODUCT ID

\*\* HMIS CODE \*\*

PRODUCT\*: M46, nM46

HEALTH: 2\*

CLASS: SOLVENT THINNED PAINT

FLAMMABILITY: 2

NAME: EPOXY MASTIC COATING CATALYST

REACTIVITY: 0

COLOR: ALL

PERSONAL PROT:

#### \*\* SARA TITLE 312 \*\*

ACUTE: Y CHRONIC: Y FIRE: Y PRESSURE: N REACTIVITY: N For a complete description of HMIS and an explanation of the PERSONAL PROT: code, see Section XX.

\*NOTE: In the PRODUCT code a little n can be any capital letter of the alphabet except P or Q.

|             |                |             |                    | AH II NO |          |         |     |          |
|-------------|----------------|-------------|--------------------|----------|----------|---------|-----|----------|
| INC<br>HAZ  | SREDIE<br>SARA | NT<br>MAX % | CAS #              | TLV      | PEL      |         |     |          |
| Epox<br>Y   | ky Res<br>N    | in<br>43.9  | 025068-38-6        | N/E      | N/E      |         |     |          |
| 2 - He<br>Y | eptano<br>N    | ne<br>2.0   | 000110-43-0        | 50 ppm   | 100 ppm  |         |     |          |
| Sto         | idard          | Solvent     |                    | 100 ppm  | 100 ppm  |         |     | 2.0 @ 20 |
| Y           | N              |             | 121888-66-2        |          |          |         |     |          |
|             | Phos           |             | 007779-90-0        | 10 mg/M3 | 15 mg/M3 | N/E     | N/E | N/A      |
| Y           | N              |             | ate<br>007784-30-7 |          |          |         |     |          |
| Wol:        | laston<br>N    | ite<br>10.0 | 013983-17-0        | 10 mg/M3 | N/E      |         |     |          |
| хуі         | ene            |             | 001330-20-7        |          |          | 150 ppm | N/E | 21 @ 380 |
| Eth;        | yl Ben<br>N    | zene<br>. 4 | 000100-41-4        | 100 ppm  | 100 ppm  | 125 ppm | N/E | 10 @ 200 |

MSDS #: M46, nM46 Page 2

Talc Y N 20.2 014807-96-6 2 mg/M3 2 mg/M3 N/E N/E N/A -----Butylated Urea-Formaldehyde Resin Y N .5 068002-19-7 N/E N/E N/E N/E\_\_\_\_\_\_ Propylene Glycol Monomethyl Ether Y N 4.6 000107-98-2 100 ppm 100 ppm 150 ppm N/E \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* This product contains one or more reported carcinogens or suspected carcinogens which are noted NTP, IARC, or OSHA-Z in the other limits recommended column. \*\*\*\*\*\*\*\*\*\*\* Note: This product contains pigments which may become a dust nuisance when removed by abrasive blasting, sanding, or grinding. This product may contain small amounts of materials known to the State of California to cause cancer and reproductive harm. \_\_\_\_\_\_ SECTION III PHYSICAL DATA \_\_\_\_\_\_\_ BOIL RANGE: 117.0 to 343.0 WT/GL: 12.3 to 12.3 %VOL/VOL: 21.7 to 21.7 EVAPORATION RATE: SLOWER THAN ETHER VAPOR DENSITY: HEAVIER THAN AIR SECTION IV FIRE AND EXPLOSION HAZARD DATA D.O.T. FLAMMABILITY CLASS.: COMBUSTIBLE FLASH POINT: 102 F PMCC LEL %: 0.6 EXTINGUISHING MEDIA: FOAM CO2 DRY CHEMICAL WATER FOG UNUSUAL FIRE AND EXPLOSION HAZARDS: Toxic gases may form when product burns. Closed containers may burst if exposed to extreme heat or fire. SPECIAL FIRE FIGHTING PROCEDURES: Cool exposed containers with water. Use self-contained breathing apparatus. Do not use water stream on burning liquid. Use self-contained breathing SECTION V HEALTH HAZARD DATA -----IMPORTANT: Designed to be mixed with other components. The resulting material will have the hazards of all its components. EFFECTS OF OVEREXPOSURE - ACUTE: Inhalation - Harmful if inhaled. May affect the brain or nervous system causing dizziness, headache or nausea. Contact - Causes eye irritation. Contact - Causes skin irritation. Skin Absorption - Hazardous ingredients contained in this product have the capacity to be absorbed through the skin in sufficient quantities to cause systemic toxicity. See Safe Handling and Use Information (Section VIII). Ingestion - Irritation of the digestive tract and nervous system depression (drowsiness, dizziness, loss of coordination and fatigue). Aspiration

cause lung inflammation and damage. EFFECTS OF OVEREXPOSURE - CHRONIC:

NOTICE: Reports have associated permanent brain and nervous system damage with repeated, prolonged overexposure to solvents among persons engaged in the painting trade. Intentional misuse by deliberately concentrating and

Hazard - This material can enter lungs during swallowing or vomiting and

MSDS #: M46, nM46 Page 3

inhaling the contents may be harmful or fatal.

TARC has classified Ethyl Benzene as possibly carcinogenic for humans (2B). May cause allergic skin reaction.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE:

None expected when used in accordance with Safe Handling and Use Information (Section VIII).

PRIMARY ROUTE(S) OF ENTRY: DERMAL INHALATION INGESTION EMERGENCY AND FIRST AID PROCEDURES:

Inhalation - Remove from hazard area, maintain breathing, call physician. Skin Contact - Remove with soap and water.

Eye Contact - Flush immediately with large amounts of water. Call physician Ingestion - Drink 1 or 2 glasses of water to dilute.

DO NOT induce vomiting. Call physician.

----

#### SECTION VI REACTIVITY DATA

-----

STABLEITY: STABLE under normal conditions HAZARDOUS POLYMERIZATION WILL NOT OCCUR HAZARDOUS DECOMPOSITION PRODUCTS:

Burning may produce carbon dioxide and carbon monoxide.

CONDITIONS TO AVOID: Elevated temperatures and build up of vapors INCOMPATABILITY (MATERIALS TO AVOID): None reasonably foreseeable.

#### SECTION VII SPILL OR LEAK PROCEDURES

-----

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Remove all sources of ignition. Avoid breathing vapors. Use non-sparking tools to return materials to container. Absorb residue with Fullers earth. WASTE DISPOSAL METHOD:

Conventional procedures in compliance with local, state and federal regulations. Do not incinerate sealed containers.

### SECTION VIII SAFE HANDLING AND USE INFORMATION

------

#### RESPIRATORY PROTECTION:

Wear a properly fitted vapor/particulate respirator approved by NIOSH for use with paints during application or sanding and until all vapors and spray mist are exhausted. In confined spaces or in situations where continuous spray operations are typical, or if proper respirator fit is not possible, wear a positive-pressure, supplied air respirator approved by NIOSH.

#### **VENTILATION:**

Adequate to maintain working atmosphere below T.L.V. and L.E.L.

(See Sect. II for ingredient data and concentrations). Mechanical exhaust may be required in confined areas.

Discharge exhaust only in area away from ignition sources.

PROTECTIVE GLOVES: Solvent impermeable gloves are required.

EYE PROTECTION : Splash goggles or safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT: Clothing adequate to protect skin.

HYGIENIC PRACTICES:

Remove and wash clothing before reuse. Wash hands before eating, smoking or using the washroom.

-----

# SECTION IX SPECIAL PRECAUTIONS

DEPCAUTIONS TO BE TAKEN IN MANDIANG AND STORAGE.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Flammable - Keep away from heat, sparks and flames.

MSDS # : M46, nM46

#### OTHER PRECAUTIONS :

Use only with adequate ventilation. Avoid prolonged contact with skin and breathing of vapor spray mist or sanding dust.

Close container after each use. Keep out of reach of children. Do not take internally.

\_\_\_\_\_\_

\_\_\_\_\_\_

#### SECTION XX

HMIS (Hazardous Materials Identification System) (R) NPCA HMIS is a recognized workplace Hazard Communications System as required by OSHA (29 CFR 1910.1200). Information on establishing a compliant hazardous communication program using HMIS is available from:

American Labelmark Co., Inc., Labelmaster Division 5724 N. Pulaski Rd., Chicago, IL 60646 1-800-621-5808

The ratings assigned by Benjamin Moore & Co. are only suggested ratings; the contractor/employer has ultimate responsibility for HMIS rating where this system is used.

PERSONAL PROTECTION: This code is left blank on Benjamin Moore & Co. MSDS's as it depends on application technique and the workplace ventilation. Please read Sections II through IX of this MSDS before deciding on appropriate protective equipment and beginning work. There are codes available for this section which can be obtained from Labelmaster. This product contains at least one toxic chemical listed in Section II that is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372.

#### DISCLAIMER

The information contained herein is presented in good faith and believed to be accurate as of the effective date shown above. This information is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determination of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. Any use of this data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

\_\_\_\_\_\_\_

NOTICE: Removal of old paint by sanding, scraping or other means may generate dust or fumes which contain lead. Exposure to lead dust or fumes may cause adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For additional information, contact the USEPA/Lead Information Hotline at 1-800-LEAD-FYI.

# ASH GROVE CEMENT COMPANY



### RIVERGATE LIME PLANT — WESTERN REGION

13939 N. RIVERGATE BLVD. PORTLAND, OREGON 97203 PHONE 503-286-1677 FAX 503-289-2272

# **Dolomitic Rock**

Typical Analysis Data Sheet

# **Chemical Properties (weight percent)**

| Calcium Carbonate            | CaCO <sub>3</sub>              | 55   |
|------------------------------|--------------------------------|------|
| Magnesium Carbonate          | $MgCO_3$                       | 44   |
| Silicon Dioxide              | SiO <sub>2</sub>               | 1.74 |
| Aluminum Oxide               | $Al_2\ddot{O}_3$               | 0.42 |
| Ferric Oxide                 | Fe <sub>2</sub> O <sub>3</sub> | 0.28 |
| Sulfur (as SO <sub>3</sub> ) |                                | 0.00 |
| Sodium Oxide                 | Na <sub>2</sub> O              | 0.02 |
| Potassium Oxide              | K₂Õ                            | 0.00 |
| Calcium Carbonate Equiva     | 104 %                          |      |
| pН                           |                                | 8    |

# **Physical Properties**

| Passing US 5/8" | 100 %         |
|-----------------|---------------|
| Passing US 1/2" | 99.8 %        |
| Passing US 3/8" | 92.6 %        |
| Passing US 1/4" | 43.0 %        |
| Passing US 1/8" | 17.5 %        |
| Bulk Density    | 97.5 lbs./ft³ |



AMERICA

Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 1/6

Printing date 07/02/2001

Reviewed on 05/07/2001

# I Identification of substance

- · Product details
- · Trade name: SUPER HYBOND PLUS
- · Manufacturer/Supplier: RHI Refractories America 600 Grant Street Pittsburgh, PA 15219

Phone: (412) 562-6200

- · Information department: MSDS Technical Information: (412) 562-6437
- Emergency information: CHEMTREC 24 HOUR EMERGENCY PHONE NUMBER: 1-800-424-9300.

### 2 Composition/Data on components

- · Chemical characterization
- Description: Mixture of the substances listed below with nonhazardous additions.

| Component  | ş;                                |          |
|------------|-----------------------------------|----------|
| 1302-93-8  | alumina silicate                  | 30-60%   |
| 14464-46-1 | crystalline silica (cristobalite) | 10-20%   |
| 1302-87-0  | hydrous alumina silicate          | 10-20%   |
| 1302-76-7  | alumina silicate (kyanite)        | 5-10%    |
| 14808-60-7 | crystalline silica (quartz)       | 5-10%    |
| 10043-01-3 | aluminum sulphate                 | 2.5-5%   |
| <u> </u>   | organic fibers                    | 0.1-0.5% |

# 3 Hazards identification

· Hazard description:

Toxic

· Medical conditions aggravated by exposure to the product: Asthma, chronic lung disease, and skin irritation.

· Carcinogenicity Information:

Crystalline silica is listed by IARC as a Group I Carcinogen "sufficient evidence of carcinogenicity in humans", and is listed by NTP as K, "Known To Be A Human Carcinogen".

· Information pertaining to particular dangers for man and environment:

May cause cancer by inhalation.

Danger of serious damage to health by prolonged exposure.

PRODUCT CONTAINS CRYSTALLINE SILICA, "a chemical known to the State of California to cause cancer." Prolonged or repeated inhalation of dust from products containing crystalline silica can cause silicosis or cancer.

NFPA ratings (scale 0-4)



Health = 0 Fire = 0 Reactivity = 0

(Contd. on page 2)

– USA



AMERICA

Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 2/6

Printing date 07/02/2001

Reviewed on 05/07/2001

(Contd. from page 1)

Trade name: SUPER HYBOND PLUS

· HMIS Classification

HEALTH 0
FIRE 0
REACTIVITY 0

Health: \*0 Flammability: 0 Reactivity: 0

### 4 First aid measures

- · After inhalation: Move to fresh air; consult doctor if needed.
- · After skin contact: Immediately wash with water and soap and rinse thoroughly.
- · After eye contact: Rinse opened eye for several minutes under running water.
- · After swallowing:

This product is intended for industrial applications; in the unlikely event that this product is swallowed, consult a physician if any adverse medical conditions occur.

### 5 Fire fighting measures

- · Suitable extinguishing agents: Use fire fighting measures that suit the environment.
- · Protective equipment: No special measures required.

### 6 Accidental release measures

- · Person-related safety precautions: Not required.
- · Measures for environmental protection: No special measures required.
- · Measures for cleaning/collecting:

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

### 7 Handling and storage

- Handling:
- · Information for safe handling:

Ensure good ventilation/exhaust at the workplace.

Prevent formation of dust.

- · Information about protection against explosions and fires: Keep respiratory protective device available.
- · Storage:
- · Requirements to be met by storerooms and containers: No special requirements.
- · Information about storage in one common storage facility: Not required.
- · Further information about storage conditions: Store product inside, out of extreme weather conditions.
- · Storage class:
- · Class according to regulation on flammable liquids: Not applicable

(Contd. on page 3)



Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 3/6

Printing date 07/02/2001

Reviewed on 05/07/2001

Trade name: SUPER HYBOND PLUS

(Contd. from page 2)

| Components                   | Exposure controls and personal protection  Components with limit values that require monitoring at the workplace:                        |  |  |  |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| 14464-46-1                   | rystalline silica (cristobalite)                                                                                                         |  |  |  |
|                              | 0.05 R mg/m <sup>3</sup> 0.05* mg/m <sup>3</sup> *Respirable dust                                                                        |  |  |  |
| OSHA PEL                     | 1/2 the value calculated from the respirable dust                                                                                        |  |  |  |
| 14808-60-7                   | rystalline silica (quartz)                                                                                                               |  |  |  |
| NIOSH REL<br>OSHA PEL        | 0.05 R mg/m³ 0.05* mg/m³ *Respirable dust Short-term value: 10** mg/m³ Long-term value: 30* mg/m³ as SiO2; *Total dust **Respirable dust |  |  |  |
| 10043-01-3 aluminum sulphate |                                                                                                                                          |  |  |  |
| ACGIH TLV<br>NIOSH REL       | as Al                                                                                                                                    |  |  |  |

- · Personal protective equipment:
- · General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Breathing equipment:



NIOSH approved respirators should be used if dust is present. A respiratory protection program should be implemented if exposures exceed OSHA PELs.

· Protection of hands:



Protective gloves recommended

· Eye protection: Safety glasses with side shields recommended

# 9 Physical and chemical properties

· Form: · Color: Solid

According to product specification

Odor:

No specific odor.

· Change in condition

Melting point/Melting range: Undetermined. Boiling point/Boiling range: Undetermined.

(Contd. on page 4)



AMERICA

Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHif Refractories family of companies

Page 4/6

Printing date 07/02/2001

Reviewed on 05/07/2001

Trade name: SUPER HYBOND PLUS

|                                         |                                               | (Contd. from page 3 |
|-----------------------------------------|-----------------------------------------------|---------------------|
| Flash point:                            | Not applicable.                               |                     |
| Auto igniting:                          | Product is not selfigniting.                  |                     |
| Danger of explosion:                    | Product does not present an explosion hazard. |                     |
| Density:                                | Not determined.                               |                     |
| Solubility in / Miscibility with Water: | Insoluble.                                    |                     |

# 10 Stability and reactivity

- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- · Dangerous reactions No dangerous reactions known.
- · Dangerous products of decomposition:

Refractories containing crystalline silica may, after service, contain more or less crystalline silica. Care must be taken to avoid and/or control dust from demolition. If in doubt of the proper protection, seek advice from a safety professional.

# 11 Toxicological information

- Acute toxicity:
- · Primary acute effects:
- · Skin contact: No irritant effect.
- · Eye contact: No irritating effect.
- · Sensitization: No sensitizing effects known.
- · Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations: Carcinogenic if inhaled.

# 12 Ecological information

· General notes: At present there are no ecotoxicological assessments.

# 13 Disposal considerations

Recommendation for Disposal of Product:

As sold, this product is not RCRA hazardous. Final used condition must be evaluated prior to disposal. Dispose of waste product in accordance with Federal, State and Local regulations.

Dust created during demolition of used product may contain crystalline silica.

· Recommendation for Disposal of Uncleaned Packaging: Reuse, recycle or treat as industrial waste.

-- USA

(Contd. on page 5)



AMERICA

Harbison-Walker, NARCO, InterTec, VRO-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 5/6

Printing date 07/02/2001

Reviewed on 05/07/2001

Trade name: SUPER HYBOND PLUS

(Contd. from page 4)

### 14 Transport information

· Transport/Additional information: Not dangerous according to available information.

# 15 Regulations

#### SARA 313 TOXIC CHEMICALS

No material listed in the components in Section 2 of this MSDS is on the SARA 313 list.

### SARA 302 EXTREMELY HAZARDOUS SUBSTANCES

No material listed in the components in Section 2 of this MSDS is on the SARA 302 list.

#### · TSCA (Toxic Substances Control Act)

This substance or all the ingredients of this product are on the Chemical Substances Inventory of the Toxic Substances Control Act (TSCA Inventory). The presence on this list does not require any legal reporting.

· WHMIS Classification

Class D - Division 2 - Sub Division A

Untested mixture containing a very toxic material

Class D - Division 2 - Sub Division B

Untested mixture containing a toxic material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

· Classification according to EU-guidelines

#### · Hazard symbols:

Toxic

### · Huzurd-determining components of labeling:

crystalline silica (cristobalite) crystalline silica (quartz)

#### · Risk phrases:

May cause cancer by inhalation.

Danger of serious damage to health by prolonged exposure.

#### Safety phrases:

When using do not eat or drink,

Do not breathe dust.

After contact with skin, wash immediately with plenty of soap and water

Wear suitable protective clothing and gloves.

In case of accident or if you feel unwell, seek medical advice immediately.

#### · Special labeling of certain preparations:

PRODUCT CONTAINS CRYSTALLINE SILICA, "a chemical known to the State of California to cause cancer." Prolonged or repeated inhalation of dust from products containing crystalline silica can cause silicosis or cancer.

· National regulations:

# · The following ingredients are known in the state of California to be a cancer risk (Proposition 65):

14464-46-1 crystalline silica (cristobalite)

14808-60-7 crystalline silica (quartz)

(Contd. on page 6)



AMERICA

Harbison-Walker, NARCO, InterTec, VRD-Americas and VRD-Canada are part of the RHI Refractories family of companies

Page 6/6

Printing date 07/02/2001

Reviewed on 05/07/2001

Trade name: SUPER HYBOND PLUS

(Contd. from page 5)

# 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Contact:

Patricia A. Kott 412-469-6123 Michael G. Lukart 412-469-6186

· Creation date: 08/14/2000

JSA -



AMERICA

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 1/6

Printing date 08/07/2001

Reviewed on 06/05/2001

# I Identification of substance

- · Product details
- · Trade name: INSWOOL-HP BLANKET 8#
- Manufacturer/Supplier: RHI Refractories America 600 Grant Street Pittsburgh, PA 15219

Phone: (412) 562-6200

- · Information department: MSDS Technical Information: (412) 562-6437
- Emergency information: CHEMTREC 24 HOUR EMERGENCY PHONE NUMBER: 1-800-424-9300.

### 2 Composition/Data on components

- · Chemical characterization:
- · CAS No. Description
- 142844-00-6 refractory ceramic fibers (RCF)
- · Chemical characterization
- · Description: Mixture of the substances listed below with nonhazardous additions.
- · Components:

142844-00-6 refractory ceramic fibers (RCF)

60-100%

Additional information:

\*This product contains Refractory Ceramic Fibers (RCF) or an RCF wrap or mat. IARC has classified RCFs as a possible human carcinogen, Group 2B. This classification was based on sufficient evidence of carcinogenicity in animals and no available data in humans. NTP classified respirable RCFs as reasonably anticipated carcinogens. Recent industry ongoing epidemiology studies show the general health of workers in the RCF industry was similar to that of workers in other dusty work environments. There have been no reports of mesothelioma, and the lung cancer rate appears similar to background rates, but the number of workers with a long latency period are too few for definitive conclusions. There was a small number of employees with an increased risk of developing pleural plaques (shadows along the inside of the chest wall). These plaques, however, are not known to cause symptoms or disability. RHI recommends that safe handling methods are followed, including air monitoring in areas wherever the potential exists for airborne fibers, minimizing airborne exposures through use of NIOSH approved respirators, and wearing protective clothing, gloves and eye protection.

### 3 Hazards identification

· Hazard description:

Toxic

- · Medical conditions aggravated by exposure to the product: Asthma, chronic lung disease, and skin irritation.
- Carcinogenicity Information:

Refractory ceramic fibers are listed by IARC as Group 2B "Possibly Carcinogenic to Humans."

 Information pertaining to particular dangers for man and environment: May cause cancer.

(Contd. on page 2)



# AMERICA

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 2/6

Printing date 08/07/2001

Reviewed on 06/05/2001

Trade name: INSWOOL-HP BLANKET 8#

Irritating to eyes and respiratory system.

(Contd. from page 1)

PRODUCT MAY CONTAIN REFRACTORY CERAMIC FIBERS (RCF) OR INCLUDE A WRAP OR MAT WHICH CONTAINS RCF:

Prolonged or repeated inhalation of RCF dust may cause cancer.

Exposure of the product to high temperature may convert fibers to crystalline silica, an IARC and NTP listed carcinogen which can cause silicosis or cancer.

Use with adequate ventilation, wear safety glasses and dust-type respirator if dust is present.

In case of inhalation, remove victim to fresh air.

In case of eye contact, flush with water for 15 minutes.

· NFPA ratings (scale 0-4)



Health = I

Fire = 0Reactivity = 0

· HMIS Classification

HEALTH •1
FIRE 0
REACTIVITY 0

Health: \*1

Flammability: 0

Reactivity: 0

# 4 First aid measures

- · After inhalation: Move to fresh air; consult doctor if needed.
- · After skin contact: Immediately wash with water and soap and rinse thoroughly.
- · After eye contact: Flush eyes with water for 15 minutes. If irritation persists, consult a doctor.
- · After swallowing:

This product is intended for industrial applications; in the unlikely event that this product is swallowed, consult a physician if any adverse medical conditions occur.

### 5 Fire fighting measures

- · Suitable extinguishing agents: Use fire fighting measures that suit the environment.
- · Protective equipment: No special measures required.

### 6 Accidental release measures

- · Person-related safety precautions: Not required.
- · Measures for environmental protection: No special measures required.
- · Measures for cleaning/collecting:

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

-usa -

(Contd. on page 3)



AMERICA

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 3/6

Printing date 08/07/2001

Reviewed on 06/05/2001

Trade name: INSWOOL-HP BLANKET 8#

(Contd. from page 2)

### 7 Handling and storage

- · Handling:
- · Information for safe handling: Prevent formation of dust.
- · Information about protection against explosions and fires: No special measures required.
- · Storage:
- · Requirements to be met by storerooms and containers: No special requirements.
- · Information about storage in one common storage facility: Not required.
- · Further information about storage conditions: Store product inside, out of extreme weather conditions.
- · Storage class:
- · Class according to regulation on flammable liquids: Not applicable

### 8 Exposure controls and personal protection

Components with limit values that require monitoring at the workplace:

142844-00-6 refractory ceramic fibers (RCF)

ACGIH TLV : 0.2 f/cc

- · Personal protective equipment:
- · General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

Breathing equipment:



NIOSH approved respirators should be used if dust is present. A respiratory protection program should be implemented if exposures exceed OSHA PELs.

· Protection of hands:



Protective gloves recommended

· Eye protection: Safety glasses with side shields recommended

### 9 Physical and chemical properties

· Form:

Fibers

· Calor:

White

· Odor:

Odorless

· Change in condition

Melting point/Melting range: 1760°C (3200°F)
Boiling point/Boiling range: Undetermined.

(Contd. on page 4)

超004/018



### **MATERIAL SAFETY DATA SHEET**

AMERICA

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 4/6

Printing date 08/07/2001

Reviewed on 06/05/2001

Trade name: INSWOOL-HP BLANKET 8#

|                                         |                                               | (Contd. from page 3) |
|-----------------------------------------|-----------------------------------------------|----------------------|
| Flash point:                            | Not applicable.                               |                      |
| Auto igniting:                          | Product is not selfigniting.                  |                      |
| Danger of explosion:                    | Product does not present an explosion hazard. |                      |
| Density at 20°C (68°F):                 | 2.73 g/cm³                                    |                      |
| Solubility in / Miscibility with Water: | Insoluble.                                    |                      |
|                                         |                                               |                      |

# 10 Stability and reactivity

- · Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- · Dangerous reactions No dangerous reactions known.
- · Dangerous products of decomposition: No dangerous decomposition products known.

# 11 Toxicological information

- · Acute toxicity:
- · Primary acute effects:
- · Skin contact: No irritant effect.
- · Eye contact: Irritating effect.
- · Sensitization: No sensitizing effects known.
- · Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations: Irritant.

Carcinogenic.

# 12 Ecological information

· General notes: At present there are no ecotoxicological assessments.

### 13 Disposal considerations

· Recommendation for Disposal of Product:

As sold, this product is not RCRA hazardous. Final used condition must be evaluated prior to disposal. Dispose of waste product in accordance with Federal, State and Local regulations.

· Recommendation for Disposal of Uncleaned Packaging: Reuse, recycle or treat as industrial waste.

### 14 Transport information

Transport/Additional information: Not dangerous according to available information.

- USA

(Contd. on page 5)



AMERICA

A. P. Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 5/6

Reviewed on 06/05/2001

Printing date 08/07/2001

Trade name: INSWOOL-HP BLANKET 8#

(Contd. from page 4)

# 15 Regulations

#### SARA 313 TOXIC CHEMICALS

No material listed in the components in Section 2 of this MSDS is on the SARA 313 list.

### SARA 302 EXTREMELY HAZARDOUS SUBSTANCES

No material listed in the components in Section 2 of this MSDS is on the SARA 302 list.

#### TSCA (Toxic Substances Control Act)

This substance or all the ingredients of this product are on the Chemical Substances Inventory of the Toxic Substances Control Act (TSCA Inventory). The presence on this list does not require any legal reporting.

#### · WHMIS Classification

Class D - Division 2 - Sub Division A

Untested mixture containing a very toxic material

Class D - Division 2 - Sub Division B

Untested mixture containing a toxic material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

· Classification according to EU-guidelines

# · Hazard symbols:

Toxic

# · Hazard-determining components of labeling:

refractory ceramic fibers (RCF)

#### · Risk phrases:

May cause cancer.

Irritating to eyes and respiratory system.

# · Safety phrases:

Do not breathe dust.

Avoid contact with eyes.

After contact with skin, wash immediately with plenty of soap and water

Wear suitable protective clothing and gloves.

# · Special labeling of certain preparations:

PRODUCT MAY CONTAIN REFRACTORY CERAMIC FIBERS (RCF) OR INCLUDE A WRAP OR MAT WHICH CONTAINS RCF:

Prolonged or repeated inhalation of RCF dust may cause cancer.

Exposure of the product to high temperature may convert fibers to crystalline silica, an IARC and NTP listed carcinogen which can cause silicosis or cancer.

Use with adequate ventilation, wear safety glasses and dust-type respirator if dust is present.

In case of inhalation, remove victim to fresh air.

In case of eye contact, flush with water for 15 minutes.

· National regulations:

# The following ingredients are known in the state of California to be a cancer risk (Proposition 65):

142844-00-6 refractory ceramic fibers (RCF)

— USA

(Contd. on page 6)



A. P., Green, Harbison-Walker, NARCO and RHI Canada are part of the RHI Refractories family of companies

Page 6/6

Printing date 08/07/2001

Reviewed on 06/05/2001

Trade name: INSWOOL-HP BLANKET 8#

(Contd. from page 5)

# 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- · Contact: Patricia A. Kott 412-469-6123
- · Creation date: 08/14/2000

us A -



# Material Safety Data Sheet for Lime Kiln Dust

# Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** 

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Mixture of calcium oxide (quick time) and calcium carbonate (limestone)

Trade Name and Synonyms:

Lime Kiln Dust

CAS No .:

1305-78-8

Date Revised:

October 2001

# Section II - Hazardous Ingredients

| Hazardous<br>Component            | CAS Number | OSHA PEL                                    | ACGIH TLV              | MSHA 1973 TLV                                |
|-----------------------------------|------------|---------------------------------------------|------------------------|----------------------------------------------|
| Calcium oxide<br>(quicklime, CaO) | 1305-78-8  | 5 mg/m <sup>3</sup>                         | 2 mg/m <sup>3</sup>    | 5 mg/m <sup>3</sup>                          |
| Calcium carbonate (limestone)     | 1317-65-3  | 15 mg/m <sup>3</sup>                        | 10 mg/m <sup>3</sup>   | 10 mg/m <sup>3</sup>                         |
| Magnesium oxide                   | 1309-48-4  | 10 mg/m <sup>3</sup>                        | 10 mg/m <sup>3</sup>   | 10 mg/m <sup>3</sup> **                      |
| Quartz, crystalline silica        | 14808-60-7 | PEL = 10 mg/m <sup>3</sup><br>% Silica* + 2 | 0.05 mg/m <sup>3</sup> | PEL = 10 mg/m <sup>3</sup><br>% Silica * + 2 |

Lime Kiln Dust (LKD) may contain greater than 0.1% quartz, crystalline silica. Chronic exposure, above the allowed limit, to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

**ACGIH** 

American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL TLV Permissible Exposure Limit Threshold Limit Value

<sup>\*</sup>Respirable fraction \*\* As fume

# Section III - Chemical and Physical Data

Chemical Family:

Inorganic Base

Molecular Weight:

Not Applicable

**Boiling Point:** 

2850°C

Melting Point:

2614°C

Specific Gravity:

3.00 (Air=1) Not Applicable

Vapor Density: Solubility in Water:

< 0.131 g/100mL @ 10°C; reacts with water to generate calcium hydroxide and large

Evaporation Rate: Not Applicable

amounts of heat

Appearance and Odor: White or gray lumps or powder, odorless

# Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; this material is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable

LEL: Not Applicable

UEL: Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Lime Kiln Dust is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of Lime Kiln Dust can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

### Section V - Health Hazard Data

Lime Kiln Dust can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

# Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

#### 1. Inhalation: corrosive

- a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
- Chronic exposure: Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
- c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.

### 2. Skin contact: corrosive

- a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
- b. Chronic exposure: A chronic dermatitis may follow repeated contact.
- First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.

#### 3. Eye contact: corrosive

- a. Acute exposure: Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
- b. Chronic exposure: Prolonged contact may cause conjunctivitis.
- c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO Calcium Carbonate listed as an OSHA Carcinogen: NO By NTP: NO By IARC: NO Magnesium Oxide listed as an OSHA Carcinogen: NO By NTP: NO By IARC: NO Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Silica is on the California Governor's Proposition 65 list. Components used in this product may contain trace amounts of naturally occurring elements (such as, but not limited to, arsenic, cadmium) that are on the Governor's Proposition 65 list.

**Medical conditions generally aggravated by exposure:** Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

# Section VI - Reactivity Data

**Stability:** Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition. May react explosively with maleic anhydride. May form explosive salts with Nitro compounds. May react with aluminum in the presence of water to form hydrogen gas.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

# Section VII - Precautions for Safe Handling and Use -

Saturated solutions of Lime Kiln Dust can have pH of 12-12.49 at 25°C or above, and are corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

**Storage:** Protect product against physical damage and store in a dry place away from water, moisture, acids and other incompatible materials. Do not store or ship in aluminum containers.

### Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

#### Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability (with at least an N95 rating) for protection against airborne Lime Kiln Dust.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of Lime Kiln Dust.

Work/Hygienic Practices: Immediately after working with Lime Kiln Dust, workers should shower with soap and water. Follow listed precautions as appropriate during the maintenance and/or repair of contaminated equipment.

### Section IX - Shipping and Handling Restrictions

When being transported by air, calcium oxide is classified in Department of Transportation (DOT) regulations as a hazardous material. If this material may be shipped by air, it must be presented to the carrier appropriately packaged, marked, and labeled and must be accompanied by the appropriate shipping documentation. Only personnel that are trained and certified under applicable DOT Hazardous Materials Regulations (found in 49 CFR) may prepare calcium oxide for air transport.

For additional information, contact the DOT Website at: http://www.text-trieve.com/dotrspa

#### Disclaimer

Ash Grove Cement Company provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must consult their own technical and legal advisors and/or exercise their own judgment in determining its appropriateness for a particular purpose.

ASH GROVE CEMENT COMPANY MAKES SPECIFICALLY DISCLAIMS ANY EXPRESS WARRANTY, ANY IMPLIED WARRANTY OF MERCHANTABILITY OF GOODS, AND ANY IMPLIED WARRANTY OF FITNESS OF GOODS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER EXPRESSED OR IMPLIED WARRANTY, AND, ALL SUCH WARRANTIES ARE EXCLUDED.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.



# Material Safety Data Sheet for Lime Kiln Dust

# Section I - Identity

Manufacturer's name and address:

Ash Grove Cement Company

8900 Indian Creek Parkway

P. O. Box 25900

Overland Park, KS 66225

**Emergency Telephone Number:** 

(913) 451-8900

Information Telephone Number:

(913) 451-8900

Chemical Name and Synonyms:

Mixture of calcium oxide (quick lime) and calcium carbonate (limestone)

Trade Name and Synonyms:

Lime Kiln Dust

CAS No.:

1305-78-8

Date Revised:

October 2001

# Section II - Hazardous Ingredients

| Hazardous<br>Component            | CAS Number | OSHA PEL                                             | ACGIH TLV              | MSHA 1973 TLV                               |
|-----------------------------------|------------|------------------------------------------------------|------------------------|---------------------------------------------|
| Calcium oxide<br>(quicklime, CaO) | 1305-78-8  | 5 mg/m <sup>3</sup>                                  | 2 mg/m <sup>3</sup>    | 5 mg/m <sup>3</sup>                         |
| Calcium carbonate (limestone)     | 1317-65-3  | 15 mg/m <sup>3</sup>                                 | 10 mg/m <sup>3</sup>   | 10 mg/m <sup>3</sup>                        |
| Magnesium oxide                   | 1309-48-4  | 10 mg/m <sup>3</sup>                                 | 10 mg/m <sup>3</sup>   | 10 mg/m <sup>3</sup> **                     |
| Quartz, crystalline silica        | 14808-60-7 | PEL = $\frac{10 \text{ mg/m}^3}{\text{Silica*} + 2}$ | 0.05 mg/m <sup>3</sup> | $PEL = 10 \text{ mg/m}^3$<br>% Silica * + 2 |

Lime Kiln Dust (LKD) may contain greater than 0.1% quartz, crystalline silica. Chronic exposure, above the allowed limit, to the respirable dust of materials containing crystalline silica or quartz may cause silicosis.

### \*Respirable fraction \*\* As fume

ACGIH

American Conference of Governmental Industrial Hygienists

OSHA

Occupational Safety and Health Administration

PEL

Permissible Exposure Limit

TLV

Threshold Limit Value

# Section III - Chemical and Physical Data

Chemical Family:

Inorganic Base

Molecular Weight:

Not Applicable

**Boiling Point:** 

2850°C

**Melting Point:** Specific Gravity: 2614°C

Vapor Density:

3.00 (Air=1) Not Applicable

Solubility in Water:

< 0.131 g/100mL @ 10°C; reacts with water to generate calcium hydroxide and large

**Evaporation Rate:** Not Applicable

amounts of heat

Appearance and Odor: White or gray lumps or powder, odorless

# Section IV - Fire and Explosion Hazard Data

Flash Point: Not Applicable; this material is noncombustible and not explosive.

Flammable or Explosive Limits: Not Applicable

LEL: Not Applicable

**UEL:** Not Applicable

Extinguishing Media: Not Applicable

Special Fire Fighting Procedures: Lime Kiln Dust is incombustible. In contact with water, product will hydrate evolving heat. Warning: Sufficient heat can be created during hydration to ignite paper, wood, rags or other combustible materials. CAUTION: Saturated water solutions of Lime Kiln Dust can have pH of 12-12.49. See Section VII for appropriate precautions.

Firefighting Media: Dry chemical, flooding quantities of water as spray, foam. For larger fires, use water spray, fog or alcohol foam. DO NOT use carbon dioxide or halogenated extinguishing agents.

CAUTION: Saturated water solutions of hydrated lime can have pH of 12-12.49 at temperatures of 25°C or above. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: Heat generated from reaction with water can start fires.

#### Section V - Health Hazard Data

Lime Kiln Dust can contain quartz greater than 0.1%. Chronic exposure by inhalation to respirable size quartz dust at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure has ceased. These symptoms may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest x-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. The International Agency for Research in Cancer (IARC) has determined that quartz crystalline silica is carcinogenic to humans when inhaled from occupational sources.

# Section V - Health Hazard Data - (Continued)

Route(s) of Entry: Inhalation; skin; eyes; ingestion

- 1. Inhalation: corrosive
  - a. Acute exposure: Inhalation of low concentrations may cause sore throat, coughing, choking, dyspnea, and variable symptoms of headache, dizziness, and weakness. Intense exposures may result in tightness in the chest and delayed pulmonary edema. The solubility of the substance allows further penetration that may continue for several days.
  - **b. Chronic exposure:** Bronchial irritation with chronic cough is common; chronic overexposure may result in silicosis.
  - c. First aid: Remove from exposure; move to fresh air immediately. Keep affected person warm and at rest. Get medical attention.
- 2. Skin contact: corrosive
  - a. Acute exposure: During prolonged skin contact the substance can penetrate the unprotected skin slowly, producing soft, necrotic, deeply penetrating areas on contact. The solubility allows further penetration that may continue for several days. The extent of damage depends on duration of contact.
  - b. Chronic exposure: A chronic dermatitis may follow repeated contact.
  - First aid: Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains (approximately 15-20 minutes). In the case of chemical burns, cover the affected areas with sterile, dry dressing.
     Bandage securely, but not too tightly. Get medical attention.
- 3. Eye contact: corrosive
  - **a. Acute exposure:** Direct contact with the solid or aqueous solutions may cause conjunctival edema and corneal destruction which can lead to and may cause blindness.
  - b. Chronic exposure: Prolonged contact may cause conjunctivitis.
  - c. First aid: Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of chemical remains (approximately 15-20 minutes). Get medical attention immediately. Administration of drugs to the eyes should be performed by qualified medical personnel.
- 4. Ingestion: corrosive. If ingested, consult a physician immediately.

Calcium Oxide listed as an OSHA Carcinogenic: NO By NTP: NO By IARC: NO Calcium Carbonate listed as an OSHA Carcinogen: NO By NTP: NO By IARC: NO Magnesium Oxide listed as an OSHA Carcinogen: NO By NTP: NO By IARC: NO Quartz listed as an OSHA Carcinogen: NO By NTP: YES (Group 2A) By IARC: YES (Group 1)

Silica is on the California Governor's Proposition 65 list. Components used in this product may contain trace amounts of naturally occurring elements (such as, but not limited to, arsenic, cadmium) that are on the Governor's Proposition 65 list.

Medical conditions generally aggravated by exposure: Respiratory disorders or diseases, dermatitis or other skin disorders may be aggravated by exposure.

# Section VI - Reactivity Data

Stability: Reacts rapidly with water to produce heat and form calcium hydroxide. Will gradually react with the carbon dioxide in air to form calcium carbonate; stable in absence of moisture and carbon dioxide.

Conditions to avoid: Contact with water, acids.

Incompatibility (materials to avoid): May react violently and incandescently with boric oxide, hydrogen fluoride, phosphorous pentoxide, chlorine trifluoride, and fluorine. Reaction with halogenated compounds may cause ignition. May react explosively with maleic anhydride. May form explosive salts with Nitro compounds. May react with aluminum in the presence of water to form hydrogen gas.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition or By-Products: None.

# Section VII - Precautions for Safe Handling and Use -

Saturated solutions of Lime Kiln Dust can have pH of 12-12.49 at 25°C or above, and are corrosive to unprotected skin and eyes. Such solutions may be created during fire fighting. Tight fitting goggles and gloves, boots and other personal protective equipment (PPE) must be used to prevent skin and eye contact. PPE resistant to permeation and penetration by lime water must be chosen.

Handling: Use protective equipment as described above in this section.

Storage: Protect product against physical damage and store in a dry place away from water, moisture, acids and other incompatible materials. Do not store or ship in aluminum containers.

### Steps to be taken in case material is released or spilled:

Do not touch spilled material. Stop leak if possible without risk. For small spills, take up with absorbent material and place into containers for later disposal. For small dry spills, shovel material into clean, dry container and cover. Move containers from spill area. For large spills, dike far ahead of spill for later disposal. Dispose of in accordance with all local, state and federal requirements. Spills should not be flushed to surface waters or sewers.

### Section VIII - Control Measures

Ventilation: Enclose all dusty processes; use local exhaust ventilation; use ventilation to vent dust to collector.

Personal Protective Equipment (PPE): Use a NIOSH-approved (42 CFR 84) respirator with dust filtering capability (with at least an N95 rating) for protection against airborne Lime Kiln Dust.

Use gauntlet type work gloves and tight fitting goggles. Long sleeve shirts and long pants should be worn. Protective barrier creams may be used on exposed skin surfaces.

Refer to Section VII for protection against exposure to solutions of Lime Kiln Dust.

Work/Hygienic Practices: Immediately after working with Lime Kiln Dust, workers should shower with soap and water. Follow listed precautions as appropriate during the maintenance and/or repair of contaminated equipment.

### Section IX - Shipping and Handling Restrictions

When being transported by air, calcium oxide is classified in Department of Transportation (DOT) regulations as a hazardous material. If this material may be shipped by air, it must be presented to the carrier appropriately packaged, marked, and labeled and must be accompanied by the appropriate shipping documentation. Only personnel that are trained and certified under applicable DOT Hazardous Materials Regulations (found in 49 CFR) may prepare calcium oxide for air transport.

For additional information, contact the DOT Website at: http://www.text-trieve.com/dotrspa

### Disclaimer

Ash Grove Cement Company provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must consult their own technical and legal advisors and/or exercise their own judgment in determining its appropriateness for a particular purpose.

ASH GROVE CEMENT COMPANY MAKES SPECIFICALLY DISCLAIMS ANY EXPRESS WARRANTY, ANY IMPLIED WARRANTY OF MERCHANTABILITY OF GOODS, AND ANY IMPLIED WARRANTY OF FITNESS OF GOODS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER EXPRESSED OR IMPLIED WARRANTY, AND, ALL SUCH WARRANTIES ARE EXCLUDED.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.

— Section 1 — Product Identification



# **Material Safety Data Sheet**

The Sherwin-Williams Co. 101 Prospect Ave. N.W. Cleveland, OH 44115 Emergency telephone number Information telephone number Date of preparation

(216) 566-2917 (216) 566-2902 September 12, 2002

@2002, The Sherwin-Williams Co.

**B59-TC** 

# **THERMO-CURE® Heat Resistant Coating**

| 2 — ACGIH                    |                                                                                                   |                        |                             |                           | 1                                       |                                  |                                   |        |
|------------------------------|---------------------------------------------------------------------------------------------------|------------------------|-----------------------------|---------------------------|-----------------------------------------|----------------------------------|-----------------------------------|--------|
| gredients TLV                | OSHA<br>PEL<br><stel></stel>                                                                      | Units                  | LD50<br>(Rat-Oral)<br>mg/kg | LC50<br>(Rat)<br>ppm/4hr. | Vapor<br>Pressure<br>mm                 | <b>B59A380</b><br>Cirrus<br>Gray | <b>B59A381</b><br>Thunder<br>Gray |        |
| 50                           | 100<br><150>                                                                                      | ppm (skin)             | 5000                        | 4000                      | 22.0                                    | 5                                | 5                                 |        |
| 100<br><125>                 | 100<br><125>                                                                                      | ppm                    | 3500                        | NAv                       | 7.1                                     | 2                                | 2                                 | 1_     |
| 100<br><150>                 | 100<br><150>                                                                                      | ppm                    | 4300                        | 5000                      | 5.9                                     | 10                               | 10                                | P<br>E |
| enzene 25                    | 25                                                                                                | ppm                    | NAv                         | NAv                       | 2.0                                     | 1                                | 1                                 | R<br>C |
| enzene 25                    | 25                                                                                                | ppm                    | NΑv                         | NAv                       | 2.0                                     | 2                                | 2                                 | E<br>N |
| C 50                         | C 50                                                                                              | ppm (skin)             | 790                         | 8000                      | 5.5                                     | 3                                | 4                                 | 7      |
| 2                            | 2                                                                                                 | Mg/m3 as<br>Resp. Dust | NAv                         | NAv                       |                                         | 28                               | 28                                | В      |
| . 10                         | 10[5]                                                                                             | mg/m3 as Dust          |                             | NAv                       |                                         | 18                               | 11                                | Y      |
| e Black Spinel. 0.5          | 0.5                                                                                               | mg/m3                  | NAv                         | NAv                       |                                         |                                  | 5                                 | W<br>E |
| mpound. [% Chromium]         |                                                                                                   |                        |                             |                           |                                         |                                  | 5 [2.2]                           | l<br>G |
| pound [% Manganese]          |                                                                                                   |                        |                             |                           |                                         |                                  | 5 [0.1]                           | H<br>T |
| nd. [% Copper]               |                                                                                                   |                        |                             |                           |                                         |                                  | 5 [1.3]                           |        |
| [% Zinc]                     |                                                                                                   |                        |                             |                           |                                         | 6 [2.7]                          | 8 [3.4]                           |        |
| on (ibs.)                    |                                                                                                   |                        |                             |                           |                                         | 13.13                            | 13.16                             |        |
| t (%)                        |                                                                                                   |                        |                             |                           |                                         | 76.2                             | 76.2                              |        |
| e (%)                        |                                                                                                   |                        |                             |                           |                                         | 56.1                             | 55.9                              |        |
| rganic Compounds) - Ibs./ç   | al.                                                                                               |                        |                             |                           |                                         | 3.12                             | 3.13                              |        |
| Reactive                     |                                                                                                   |                        |                             |                           |                                         | Yes                              | Yes                               | ]      |
|                              |                                                                                                   |                        |                             |                           |                                         | 75                               | 75                                | 1      |
| ating (health - flammability | - reactivity                                                                                      | /)                     |                             |                           |                                         | 2* - 3 - 0                       | 2* - 3 - 0                        | 1      |
|                              | STEL>   50     100     <125     100     <150     enzene   25     enzene   25     C 50     2     . | STEL>                  | STEL>                       | STEL>                     | STEL>   STEL>   mg/kg   ppm/4hr.     50 | STEL>                            | STEL>                             | STEL>  |

Ingredient subject to the reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313, 40 CFR 372.65 C

- Section 1 -Product Identification



# **Material Safety Data Sheet**

The Sherwin-Williams Co. 101 Prospect Ave. N.W. Cleveland, OH 44115

Emergency telephone number Information telephone number Date of preparation

(216) 566-2917 (216) 566-2902 **September 12, 2002** 

**B59-TC** 

### THERMO-CURE® Heat Resistant Coating

|                          |                                                               |                               |                              | 0.000                           |                             | 2                         | 7                       |                                  |                                   |             |
|--------------------------|---------------------------------------------------------------|-------------------------------|------------------------------|---------------------------------|-----------------------------|---------------------------|-------------------------|----------------------------------|-----------------------------------|-------------|
| CAS No.                  | — Section 2 —<br>Hazardous Ingredients<br>(percent by weight) | ACGIH<br>TLV<br><stel></stel> | OSHA<br>PEL<br><stel></stel> | Units                           | LD50<br>(Rat-Oral)<br>mg/kg | LC50<br>(Rat)<br>ppm/4hr, | Vapor<br>Pressure<br>mm | <b>B59A380</b><br>Cirrus<br>Gray | <b>B59A381</b><br>Thunder<br>Gray |             |
| 108-88-3 <sup>§</sup>    | Taluene.                                                      | 50                            | 100<br><150>                 | ppm (skin)                      | 5000                        | 4000                      | 22.0                    | 5                                | 5                                 |             |
| 100-41-4                 | Ethylbenzene                                                  | 100<br><125>                  | 100<br><125>                 | ppm                             | 3500                        | NAv                       | 7.1                     | 2                                | 2                                 |             |
| 1330-20-7                | Xylene.                                                       | 100<br><150>                  | 100<br><150>                 | ppm                             | 4300                        | 5000                      | 5.9                     | 10                               | 10                                | P           |
| 108-67-8                 | 1,3,5-Trimethylbenzene                                        | 25                            | 25                           | ppm                             | NAv                         | NAv                       | 2.0                     | 1                                | 1                                 | R           |
| 95-63-6                  | 1,2,4-Trimethylbenzene                                        | 25                            | 25                           | ppm                             | NAv                         | NAv                       | 2.0                     | 2                                | 2                                 | E           |
| 71-36-3 <sup>§</sup>     | 1-Butanol                                                     | C 50                          | C 50                         | ppm (skin)                      | 790                         | 8000                      | 5.5                     | 3                                | 4                                 | 1 7         |
| 14807-96-6               | Talc                                                          | 2                             | 2                            | Mg/m3 as<br>Resp. Dust          | NAv                         | NAv                       |                         | 28                               | 28                                | В           |
| 13463-67-7               | Titanium Dioxide.                                             | 10                            | 10[5]                        | mg/m3 as Dus<br>[Resp. Fraction |                             | NAv                       |                         | 18                               | 11                                | `           |
| 68186-91-4               | Copper Chromite Black Spinel.                                 | 0.5                           | 0.5                          | mg/m3                           | NAv                         | NAv                       |                         |                                  | 5                                 | W<br>E      |
| §                        | Chromium III Compound, [% Chr                                 | omium]                        |                              |                                 |                             |                           |                         |                                  | 5 [2.2]                           | <br> G      |
| <u> </u>                 | Manganese Compound [% Mang                                    | anese]                        |                              |                                 |                             | •                         | ·                       |                                  | 5 [0.1]                           | 1<br>н<br>т |
| Š                        | Copper Compound. [% Copper]                                   |                               |                              |                                 |                             |                           |                         |                                  | 5 [1.3]                           |             |
| §                        | Zinc Compound. [% Zinc]                                       |                               |                              | ·                               |                             |                           |                         | 6 [2.7]                          | 8 [3.4]                           |             |
|                          | Weight per Gallon (lbs.)                                      |                               |                              |                                 |                             |                           |                         | 13.13                            | 13.16                             |             |
|                          | Solids by Weight (%)                                          |                               |                              |                                 |                             |                           |                         | 76.2                             | 76.2                              | 1           |
|                          | Solids by Volume (%)                                          |                               |                              | • .                             |                             |                           |                         | 56.1                             | 55.9                              | 1           |
|                          | VOC (Volatile Organic Compoun                                 | ds) - lbs./g                  | al.                          |                                 |                             |                           |                         | 3.12                             | 3.13                              | 1           |
| Photochemically Reactive |                                                               |                               |                              |                                 |                             |                           |                         | Yes                              | Yes                               |             |
|                          | Flash Point (°F)                                              |                               |                              |                                 | ·-·                         |                           |                         | 75                               | 75                                |             |
| -                        | HMIS (NFPA) Rating (health - fla                              | mmability                     | - reactivity                 | y)                              |                             |                           |                         | 2* - 3 - 0                       | 2* - 3 - 0                        |             |

Ingredient subject to the reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313, 40 CFR 372.65 C

#### ection 3 — Hazards Identification

ROUTES OF EXPOSURE - Exposure may be by INHALATION and/or SKIN or EYE contact, depending on onditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective quipment.

EFFECTS OF OVEREXPOSURE - Irritation of eyes, skin and upper respiratory system. May cause nervous system lepression. Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE - Headache, dizziness, nausea, and loss of coordination are adications of excessive exposure to vapors or spray mists. Redness and itching or burning sensation may indicate the prescript exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE - None generally recognized.

CANCER INFORMATION - For complete discussion of toxicology data refer to Section 11.

#### lection 4 — First Aid Measures

LINHALED:

If affected, remove from exposure. Restore breathing. Keep warm and quiet

f on SKIN: Wash affected area thoroughly with soap and water.

Remove contaminated clothing and launder before re-use.

in EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

f SWALLOWED: Do not induce vomiting. Get medical attention immediately.

#### lection 5 — Fire Fighting Measures

 FLASH POINT
 LEL
 UEL

 See TABLE
 0.9
 11.2

FLAMMABILITY CLASSIFICATION - RED LABEL -- Flammable, Flash below 100 °F

EXTINGUISHING MEDIA - Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS - Closed containers may explode when exposed to extreme heat, upplication to hot surfaces requires special precautions. During emergency conditions overexposure to lecomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain nedical attention.

SPECIAL FIRE FIGHTING PROCEDURES - Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to sool closed containers to prevent pressure build-up and possible autolgnition or explosion when exposed to extreme leat.

#### lection 6 — Accidental Release Measures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - Remove all sources of ignition. /entilate the area. Remove with inert absorbent.

#### lection 7 — Handling and Storage

STORAGE CATEGORY - DOL Storage Class IC

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING - Contents are FLAMMABLE. Keep away from heat, parks, and open flame. During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish ill flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition. Consult NFPA Code. Use approved Bonding and Grounding procedures. Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the each of children.

#### Jection 8 — Exposure Controls/Personal Protection

PRECAUTIONS TO BE TAKEN IN USE - Use only with adequate ventilation. Avoid contact with skin and eyes, woold breathing vapor and spray mist. Wash hands after using.

These coatings may contain materials classified as nulsance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg./m3 (total dust), 3 mg./m3 (respirable raction). OSHA PEL 15 mg./m3 (total dust), 5 mg./m3 (respirable fraction).

VENTILATION - Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is naintained below applicable exposure limits. Refer to OSHA Standards 1910.94,1910.107, 1910.108.

RESPIRATORY PROTECTION - If personal exposure cannot be controlled below applicable limits by ventilation, vear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials a Section 2.

When sanding, wirebrushing, abrading, burning or welding the dried film, wear a particulate respirator approved by NOSH/MSHA for protection against non-volatile materials in Section 2.

PROTECTIVE GLOVES - Wear gloves which are recommended by glove supptier for protection against materials in Section 2.

EYE PROTECTION - Wear safety spectacles with unperforated sideshields.

OTHER PRECAUTIONS - Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

#### Section 9 — Physical and Chemical Properties

PRODUCT WEIGHT See TABLE EVAPORATION RATE Slower than ether SPECIFIC GRAVITY 1.58 VAPOR DENSITY Heavier than air BOILING POINT 222 - 337 °F MELTING POINT Not Available VOLATILE VOLUME 43 - 44 % SOLUBILITY IN WATER Not Available

#### Section 10 - Stability and Reactivity

STABILITY - Stable

CONDITIONS TO AVOID - None known.

INCOMPATIBILITY - None known.

HAZARDOUS DECOMPOSITION PRODUCTS - By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Metals in Section 2

HAZARDOUS POLYMERIZATION - Will not occur

#### Section 11 — Toxicological Information

CHRONIC Health Hazards - Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver, urinary, cardiovascular and reproductive systems.

Rats exposed to titanium dioxide dust at 250 mg./m3 developed lung cancer, however, such exposure levels are no attainable in the workplace.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Chromium III is considered the active species in cancer induction, but Chromium III compounds do not cross the cell wall. However, there is some evidence that Chromium III compounds of respirable particle size may be taken up by the cells in the lung.

#### Section 12 — Ecological Information

No data available.

#### Section 13 - Disposal Considerations

WASTE DISPOSAL METHOD - Waste from these products may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability and extractability to determine the applicable EPA hazardous waste numbers.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

#### Section 14 — Transport Information

No data available.

#### Section 15 — Regulatory Information

CALIFORNIA PROPOSITION 65 - WARNING: These products contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION - All chemicals in these products are listed, or are exempt from listing, on the TSCA Inventory.

#### Section 16 — Other Information

These products have been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The above information pertains to these products as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to these products may substantially after the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

#### ection 3 — Hazards Identification

ROUTES OF EXPOSURE - Exposure may be by INHALATION and/or SKIN or EYE contact, depending on anditions of use. To minimize exposure, follow recommendations for proper use, ventilation, and personal protective

EFFECTS OF OVEREXPOSURE - Irritation of eyes, skin and upper respiratory system. May cause nervous system epression, Extreme overexposure may result in unconsciousness and possibly death.

SIGNS AND SYMPTOMS OF OVEREXPOSURE - Headache, dizziness, nausea, and loss of coordination are adications of excessive exposure to vapors or spray mists. Redness and itching or burning sensation may indicate ve or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE - None generally recognized.

CANCER INFORMATION - For complete discussion of toxicology data refer to Section 11.

#### ection 4 — First Aid Measures

INHALED:

If affected, remove from exposure. Restore breathing. Keep warm and quiet.

Wash affected area thoroughly with soap and water. on SKIN:

Remove contaminated clothing and launder before re-use. in EYES:

Flush eyes with large amounts of water for 15 minutes. Get medical attention.

SWALLOWED: Do not induce vomiting. Get medical attention immediately.

#### ection 5 - Fire Fighting Measures

| FLASH POINT | LEL | UEL  |
|-------------|-----|------|
| See TABLE   | 0.9 | 11.2 |

FLAMMABILITY CLASSIFICATION - RED LABEL -- Flammable, Flash below 100 °F

FXTINGUISHING MEDIA - Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS - Closed containers may explode when exposed to extreme heat. pplication to hot surfaces requires special precautions. During emergency conditions overexposure to ecomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain nedical attention.

SPECIAL FIRE FIGHTING PROCEDURES - Full protective equipment including self-contained breathing apparatus hould be used. Water spray may be ineffective. If water is used, for nozzles are preferable. Water may be used to ool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme

#### ection 6 — Accidental Release Measures

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED - Remove all sources of ignition. 'entitate the area. Remove with inert absorbent.

#### ection 7 — Handling and Storage

STORAGE CATEGORY - DOL Storage Class IC

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING - Contents are FLAMMABLE. Keep away from heat. parks, and open flame. During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish If flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition. onsult NFPA Code. Use approved Bonding and Grounding procedures. Keep container closed when not in use. ransfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the

#### ection 8 — Exposure Controls/Personal Protection

PRECAUTIONS TO BE TAKEN IN USE - Use only with adequate ventilation. Avoid contact with skin and eyes. word breathing vapor and spray mist. Wash hands after using.

These coatings may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may e present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in tection 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg./m3 (total dust), 3 mg./m3 (respirable raction), OSHA PEL 15 mg./m3 (total dust), 5 mg./m3 (respirable fraction).

VENTILATION - Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is naintained below applicable exposure limits. Refer to OSHA Standards 1910.94,1910.107, 1910.108.

RESPIRATORY PROTECTION - If personal exposure cannot be controlled below applicable limits by ventilation, rear a property fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials n Section 2.

When sanding, wirebrushing, abrading, burning or welding the dried film, wear a particulate respirator approved by HOSH/MSHA for protection against non-volatile materials in Section 2.

PROTECTIVE GLOVES - Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

EYE PROTECTION - Wear safety spectacles with unperforated sideshields.

OTHER PRECAUTIONS - Intentional misuse by deliberately concentrating and inhaling the contents can be harmful

#### Section 9 — Physical and Chemical Properties

| ,                |              |                     |                   |
|------------------|--------------|---------------------|-------------------|
| PRODUCT WEIGHT   | See TABLE    | EVAPORATION RATE    | Slower than ether |
| SPECIFIC GRAVITY | 1.58         | VAPOR DENSITY       | Heavier than air  |
| BOILING POINT    | 222 - 337 °F | MELTING POINT       | Not Available     |
| VOLATILE VOLUME  | 43 - 44 %    | SOLUBILITY IN WATER | Not Available     |

#### Section 10 — Stability and Reactivity

STABILITY - Stable

CONDITIONS TO AVOID - None known.

INCOMPATIBILITY - None known.

HAZARDOUS DECOMPOSITION PRODUCTS - By fire: Carbon Dioxide, Carbon Monoxide, Oxides of Metals in Section 2

HAZARDOUS POLYMERIZATION - Will not occur

#### Section 11 — Toxicological Information

CHRONIC Health Hazards - Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumor: in rats and tung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

Prolonged overexposure to solvent ingredients in Section 2 may cause adverse effects to the liver, urinary. cardiovascular and reproductive systems.

Rats exposed to titanium dioxide dust at 250 mg./m3 developed lung cancer, however, such exposure levels are no attainable in the workplace

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Chromium III is considered the active species in cancer induction, but Chromium III compounds do not cross the cell wall. However, there is some evidence that Chromium III compounds of respirable particle size may be taken up by the cells in the lung.

#### Section 12 — Ecological Information

No data available.

#### Section 13 - Disposal Considerations

WASTE DISPOSAL METHOD - Waste from these products may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability and extractability to determine the applicable EPA hazardous waste numbers.

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal. State/Provincial, and Local regulations regarding pollution.

#### Section 14 — Transport Information

No data available.

#### Section 15 — Regulatory Information

CALIFORNIA PROPOSITION 65 - WARNING: These products contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION - All chemicals in these products are listed, or are exempt from listing, on the TSCA Inventory.

#### Section 16 — Other Information

These products have been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The above information pertains to these products as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to these products may substantially after the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.



## Mineral Spirits 66/3 **Material Safety Data Sheet**

12/30/02 Solvent

CITGO Petroleum Corporation 1701 Golf Road, Suite 1-1101 Rolling Meadows, IL 80009-4295

MISDS No.

19024

Revision Date

01/11/2001

IMPORTANT: Read this MSOS before handling or disposing of this product and pass this information on to

| Emergency Overview                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| Physical State                                                                              | Liquid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |
| Color                                                                                       | Transparent, colorless. Odor Light peraffinic hydrocarbon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| respin Liquid contact model May be harmin Overexposure depred May be harmin Aspiration into | may irritate the eyes, mucous membranes, and atory tracti I may cause minimal to moderate eye and/or rate to severe skin irritation and inflammation! If inhaled or absorbed through the skin! Is may cause central nervous system (CNS) Is ion and/or other target organ effects! If or fatal if ingested! In the lungs can cause pulmonary edema and cal pneumonial Interest in the stant of |  |  |  |  |

| Hazard Rankings                                |     |      |  |  |  |
|------------------------------------------------|-----|------|--|--|--|
|                                                | HMS | NFPA |  |  |  |
| Health Hazard                                  | 1   | 0    |  |  |  |
| Fire Hazard                                    | 2   | 2    |  |  |  |
| Reactivity                                     | 0   | 0    |  |  |  |
| " = Chronio Health Hazard                      |     |      |  |  |  |
| Protective Equipment                           |     |      |  |  |  |
| Minimum Requirements See Section 6 for Details |     |      |  |  |  |
| 7                                              | XZ  | '    |  |  |  |
| -                                              |     |      |  |  |  |
|                                                |     |      |  |  |  |
|                                                |     |      |  |  |  |

#### SECTION 1: IDENTIFICATION

Trade Name

Mineral Spirits 55/3

**Technical Contact** 

(800) 967-7601

Medical Emergency

(8am - 4pm CT M-F)

**Product Number** 

2024

(918) 495-4700

**CAS Number** 

64742-47-8 or 8052-41-3

**CHENTREC Emergency** (United States Only)

(800) 424-9300

**Product Family** 

Petroleum Hydrocarbon Solvent

**Зуполугие** 

Stoddard Solvent, Type 1 Hydrocarbon Dryclesning Solvent (meets ASTM D-484 Type 1 specifications); Type IC Mineral Spirits (meets ASTM D-235 Type IC specifications); D40 Naphtha;

White Spirits (meets Dry Cleaning Fluid Specification PD680 - Type I; C9-C12 Petroleum Hydrocarbons.

#### SECTION 2: COMPOSITION

| Component Name(e)                              | CAS Registry No. | Concentration (%) |
|------------------------------------------------|------------------|-------------------|
| 1) Stoddard Solvent                            | 8052-41-3        | 100               |
| 2) Light Hydrotreated Distillate (Petroleum)   | 64742-47-8       | 100               |
| 3) Nonanes                                     | Mbare            | 20-35             |
| 4) C10 Alkanee, leopereffins, and Cyclosikanes | Mixture          | 40-60             |
| 5) C11 Alkanes, Isoparaffins, and Cycloalkanes | Mixture          | 15-25             |
| 6) C12 Alkanes, Isoparaffins, and Cycloelkanes | Madure           | 1-15              |

MISDS No.

19024

Revision Date

01/11/2001

Continued on Next Page

#### **SECTION 4: FIRST AID MEASURES**

5032276529

Take proper precautions to ensure your own health and safety before attempting rescue or providing first sid. For more specific information, refer to Exposure Controls and Personal Protection in Section 8 of this MSDS.

Inhelation

Immediately move victim to fresh air. If victim is not breathing, immediately begin reccue breething. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If breething is difficult, 100 percent humidified oxygen should be administered by a qualified individual. Seek medical attention immediately.

Eye Contact

Check for and remove contact lenses. If initiation or redness develops, flush eyes with cool, clean, low-pressure water for at least 15 minutes. Hold eyelids apart to ensure complete intigation of the eye and eyelid tissue. Do not use eye ointment. Seek medical attention immediately.

Skin Contact

Remove contaminated shoes and clothing. Flush affected area with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. Do not use ointments. If skin surface is not damaged, clean affected area thoroughly with mild soep and water. Seek medical attention if tissue appears damaged or if pain or initiation persists.

Ingestion

Do not induce vomiting or give anything by mouth. If aportaneous vomiting is about to occur, place victim's head below knees. If victim is drowsy or unconeclous, place on the left side with head down. Never give anything by mouth to a person who is not fully conscious. Do not leave victim unattended. Seek medical attention immediately.

Notes to Physician

Inhalation overexposure can produce toxic effects. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. Vigorous anti-inflammatory/steroid treatment may be required at first evidence of upper sirway or pulmonary edema. Administer 100 percent humidified supplemental paygen with assisted ventilation, as required.

If ingested, this material presents a significant aspiration/chemical pneumonitis hazard. As a result, induction of emesis is not recommended. Administer an equeous slumy of activated charcoel followed by a cathartic such as magnesium citrate or sorbitol. Also, treatment may involve careful gastric lavage if performed soon after ingestion or in patients who are cometose or at risk of convulsing. Protect the einway by cuffed endotrecheal intubation or by placement of the body in a Trendetenburg and left lateral decubitus position. Obtain cheat X-ray and liver function tests. Monitor for cardiac function, respiratory distress and arterial blood gases in severe exposure cases.

#### **SECTION 5: FIRE FIGHTING MEASURES**

NFPA Flammability

OSHA/NFPA Class-II Combustible Liquid, Highly combustible!

Flash Point Method

CLOSED CUP: 42° to 45°C (107° to 113°F). (Tagliabue (ASTM D-56))

Lower Flammable Limit

AP 0.6 %

Upper Flemmable Limit AP 6.0 %

**Autoignition Temperature** 

AP 230°C (446°F)

Mazardous Combustion Products Burning or excessive heating may produce amoke, carbon monoxide, carbon dioxide, and possibly other harmful gases/vapors.

Special Properties

Combustible Liquid! This material releases vapors at or approaching its flash point temperature. When mixed with air in certain proportions and exposed to an ignition source, its vapor can cause a flash fire. Use only with adequate ventilation. Vapors are heavier than air and may travel long distances along the ground to an ignition source and flash back. May create vapor/air explosion hazard in confined spaces such as sewers. If combiner is not properly cooled, it can rupture in the heat of a fire.

Extinguishing Media

SMALL FIRE: Use dry chamicals, carbon dioxide (CO<sub>2</sub>), foam, water fog, or inert gas (nitrogen). LARGE FIRE: Use foam, water fog, or waterspray. Water fog and spray are effective in cooling containers and adjacent structures but might cause frothing and/or may not achieve extinguishment. A water jet may be used to cool the vessel's external wells to prevent pressure build-up, autoignition, or explosion. NEVER use a water jet directly on the fire because it may spread the fire to a larger area.

MISDS No.

19024

Revision Date

01/11/2001

Continued on Next Page

#### Fire Fighting Protective Clothing

Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies. Evacuste area and fight the fire from a maximum distance or use unmanned hose holders or monitor nozzles. Cover pooling liquid with foam. Containers can build pressure if exposed to radiant heat cool adjacent containers with flooding quantities of water until well after the fire is cut. Withdraw immediately from the area if there is a rising sound from venting safety devices or discoloration of vessels, tanks, or pipelines. Be aware that burning liquid will float on water. Notify appropriate suthorities if liquid(s) enter sewers or waterways.

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

Take proper precautions to ensure your own health and exfety before attempting spill control or clean-up. For more specific information, refer to the Emergency Overview on Page 1, Exposure Controls and Personal Protection in Section 8 and Disposal Considerations in Section 13 of this MSDS.

Combustible Liquid! Release causes an immediate fire or explosion hazard. Evacuate all non-essential personnel from immediate area and setablish a "regulated zone" with alta control and security. A vapor-suppressing foam may be used to reduce vapors. Eliminate all ignition sources. All equipment used when handling this material must be grounded. Stop the teak if it can done without risk. Do not touch or walk through spilled material. Remove spillage immediately from hard, amouth walking areas. Prevent its entry into waterways, sewers, besements, or confined areas. Absorb or cover with dry earth, sand, or other non-combustible material and transfer to appropriate waste containers. Use clean, non-sperking tools to collect absorbed material.

For large spills, secure the area and control access. Dike far ahead of a liquid spill to ensure complete collection. Water mist or apray may be used to reduce or disperse vapors; but, it may not prevent ignition in closed spaces. This material will float on water and its run-off may create an explosion or fire hazard. Verify that responders are properly HAZWOPER-trained and wearing appropriate respiratory equipment and life-resistant protective clothing during cleanup operations. In an urban area, cleanup spill as soon as possible; in natural environments, cleanup on advice from specialists. Pick up free liquid for recycle and/or disposal if it can be accomplished safety with explosion-proof equipment. Collect any excess material with absorbent pade, eard, or other hact non-combustible absorbent materials. Place into appropriate weate containers for later disposal. Comply with all lews and regulations.

#### SECTION 7: HANDLING AND STORAGE

#### Hendiling

A spill or leak can cause an immediate firs/explosion hazard. Keep containers closed and do not handle or store near heat, sparks, or any other potential ignition sources. Bond and ground all equipment before transferring this material from one container to another. Do not contact with oxidizable materials. Do not breathe vapor. Use only with adequate ventilation/personal protection. Never siphon by mouth, Avoid contact with eyes, skin, and clothing. Prevent contact with food, chewing, or smoking materials. Do not take internally.

When performing repairs and maintenance on contaminated equipment, keep unnecessary persons away from the area. Eliminate all potential ignition sources. Drain and purge equipment, as necessary, to remove material residues. Use gloves constructed of impervious materials and protective clothing if direct contact is articipated. Provide vertilation to maintain exposure potential below applicable exposure limits. Promptly remove contaminated clothing. Wash exposed skin thoroughly with soap and water after handling.

Empty containers may contain material residues which can ignite with explosive force. Misuse of empty containers can be dangerous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers can cause fire, explosion, or release of toxic furnes from residues. Do not pressurize or expose empty containers to open flame, sparks, or heat. Keep container closed and drum burgs in place. All label workings and prescutions must be absenced. Return empty draws to a qualified reconditionar. Consult appropriate federal, state and local authorities before reusing, reconditioning, recipiling, or disposing of empty containers and/or waste residues of this material.

Storage

Store and transport in accordance with all applicable tews. Keep containers tightly closed and store in a cool, dry, well-ventilated place, plainly tabeled, and out of closed vehicles. Keep away from all ignition sources! Ground all equipment containing this material. Containers should be able to withstand pressures expected from warming and cooling in atorage. This combustible liquid should be stored in a separate safety cebinat or room. All electrical equipment in areas where this material is stored or handled should be installed in accordance with applicable requirements of the N.F.P.A.'s National Electical Code (NEC).

MSDS No.

19024

Revielen Date

01/11/2001

Continued on Next Page

#### SECTION 3: HAZARDS IDENTIFICATION

Also see Emergency Overview and Hazard Ratings on the top of Page 1 of this MSDS.

Malor Route(s) of Entry Skin Contact. Eye Contact. Absorption. Inhalation.

Signs and Symptoms of Acute Exposure

Inhelation

Breathing high concentrations of vapor may cause respiratory (tritation, euphoria, excitation or glddiness, headache, nauses, vomiting, abdominal pain, loss of appetits, fetigue, muscular weakness, staggering gait, and central nervous system (CN3) depression. CNS effects include dizziness, droweiness, discrimitation, vertigo, memory loss, visual disturbances, difficulty with breathing, corrustions, unconsciousness, paralysis, come, and even death, depending upon the level of exposure concentration and/or duration. Vapors can reduce the coggen content in air. Approximately 20,000 ppm (or 2 vol.%) in air is fatal to humans in 5 to 10 minutes. Sudden death from cardiac arrest (heart attack) may result from exposure to 5,000 ppm for only 6 minutes. Oxygen deprivation is possible if working in confined spaces.

Eye Contact

Animal test results on similar materials suggest that this product can cause minimal to moderate eye imitation upon short-term exposure. Symptoms include stinging, watering, redness, and swelling.

Skin Contact

Animal test results on similar materials suggest that this product can cause moderate skin irritation. Short-term contact symptoms include redness, litching, and burning of the ekin. This meterial may also be absorbed through the akin and produce CNS depression effects (see "Inhelation" above). If the skin is damaged, absorption increases. Prolonged and/or repeated contact may cause moderate to severe dermatitis. Chronic symptoms may include drying, swelling, scaling, blistering, cracking, and severe tissue damage.

ingestion

If swallowed, this material may irritate the mucous membranes of the mouth, throat, and esophagus, it can be readily absorbed by the stomach and intestinal tract. Symptoms include a burning sensation of the mouth and esophagus, nausea, vomiting, dizziness, staggering gait, drowslness, loss of consciousness, and definium, as well as additional cartral nervous system (CNS) effects (see "inhalation" above).

Due to its light viscosity, there is a danger of sepiration into the lungs during vomiting. Aspiration can result in severe lung damage or death. Progressive CNS depression, respiratory insufficiency, and ventricular fibrillation may also result in death.

Chronic Health Effects Summary Chronic effects of Ingestion and subsequent aspiration into the lungs may cause pneumetocele (lung cavity) formation and chronic lung dysfunction.

Reports have associated repeated and proplonged occupational overexposure to solvents with irreversible brain and nervous system damage (sometimes referred to as "Solvent or Painter's Syndrome"). Intentional misuale by deliberately concentrating and inhaling this product may be harmful or fatal.

Conditions Aggrevated by Exposure Personnel with pre-existing central nervous system (CNS) disease, neurological conditions, skin disorders, chronic respiratory diseases, or impaired liver or kidney function should avoid exposure.

Target Organs

This substance is toxic to lungs, central nervous system, brain, muccus membranes, skin, eyes, and possibly, the blood, liver, or kidneys.

Carcinogenic Potential

This product does not contain any components at concentrations above 0.1% which are considered cardinogenic by OSHA, IARC, or NTP.

| OSHA Hezen<br>defined in the | OSHA Hazard Classification is indicated by an "X" in the box adjacent to the hazard title. If no "X" is present, the product does not exhibit the hazard as defined in the OSHA Hazard Communication Standard (29 CFR 1910.1200). |              |  |                    |   |                  |           |                |  |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--|--------------------|---|------------------|-----------|----------------|--|
| OSHA                         | OSHA Health Hazard Classification                                                                                                                                                                                                 |              |  | OSHA Physical Hezz |   |                  | eificatio | ח              |  |
| Irritant                     | X                                                                                                                                                                                                                                 | Toxic        |  | Combustible        | X | Explosive        |           | Pyrophoric     |  |
| Sensitizer                   |                                                                                                                                                                                                                                   | Highly Toxic |  | Flanznable         |   | Oxidizer         |           | Water-reactive |  |
| Согтовку                     |                                                                                                                                                                                                                                   | Carcinogenic |  | Compressed Gas     |   | Organic Percedde |           | Unetable       |  |

| ш | RME | Mo |
|---|-----|----|

19024

Revision Date

01/11/2001

Continued on Next Page

#### SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls

Provide exhaust vertilation or other engineering controls to keep the sintome concentrations of vapor and/or mists below the pertinent exposure limits (see below). All electrical equipment should comply with the NFPA NEC Standards. Ensure that an emergency eye wash station and safety shower are near the work-station location.

Personal Protective Equipment

Personal protective equipment should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to OSHA regulations. The following pictograms represent the minimum requirements for personal protective equipment. For certain operations, additional PPE may be required.



Eye Protection

Safety glasses with side shields are recommended as a minimum protection. During transfer operations or when there is a likelihood of misting, splashing, or spraying, chemical goggles and face shield should be worn. Suitable eye wash water should be readily available.

Hend Protection

Avoid skin contact and use gloves (disposable PVC, neoprene, nitrile, vinyl, or PVC/NBR). Before eating, drinking, smoking, use of toilet facilities, or leaving work, wash hands with plenty of mild soap and water. DO NOT use gasoline, kerosene, other solvents, or harsh abrasive skin cleaners.

**Body Protection** 

Avoid skin contact. It is recommended that fire-retardant garments (e.g. Nomex<sup>TM</sup>) be worn while working with flammable and combustible liquids. If splashing or spraying is expected, chemical-resistent protective clothing (Tyvek\*, nitrile, or neoprens) should be worn. This might include long-sleaves, apron, sticker suit, boots, and additional facial protection. If general contact occurs, IMMEDIATELY remove soaked clothing and take a shower. Contaminated leather goods should be removed promptly and discarded.

Respiratory Protection

For unknown vapor concentrations use a positive-pressure, pressure-demand, self-contained breathing apparatus (SCBA). For known vapor concentrations above the occupational exposure guidelines (see below), use a NIOSH-approved organic vapor respirator if adequate protection is provided. Protection factors vary depending upon the type of respirator used. Respirator use should follow OSHA requirements (29 CFR 1910.134) or equivalent standard (e.g. ANSI ZBB.2).

General Comments

Solubility in Water

Warning! Odor is an inadequate warning for hazardous conditions.

This product is sometimes used as a dry-cleaning solvent. Retained solvent present in absorbent clothing (e.g., shoulder pads, leather beits or straps, etc.) which remains in contact with the skin for prolonged periods has caused severe skin irritation including redness, swelling, burns, and severe tissue damage. Care must be taken to ensure that garments are completely dry before being worn.

#### Occupational Exposure Guidelines

# Substance Applicable Workplace Exposure Levels 1) Stoddard Solvent TWA: 100 (ppm) from ACGIH (TLV) [2000] TWA: 500 (ppm) from QSHA (PEL) [1989] 2) Nonane, all isomers TWA: 200 (ppm) from ACGIH (TLV) [2000] TWA: 200 (ppm) from OSHA (PEL) [1989]

#### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| Physical State      | Liquid.                                                                                         | Color  | Transparent, colorless. | Odor          | Light paraffinic hydrocarbon.    |
|---------------------|-------------------------------------------------------------------------------------------------|--------|-------------------------|---------------|----------------------------------|
| Specific Gravity    | 0.78 (Water = 1)                                                                                | ρΗ     | Not applicable.         | Vapor Dunsity | 4.8 (Air = 1)                    |
| Boiling Point/Range | 160° to 200°C<br>(320° to 392°F) (ASTM                                                          | D-2667 | Melting/Fred            | zing Point    | -66" to -25"C<br>(-65" to -13"F) |
| Vapor Pressure      | 2.6 mm of Hg at 20°C (<br>(ASTM D-5191) or<br>0.35 tort at 20°C (68°F)<br>Isoteniscope (ASTM D- | ) by   | Viscosity (ci           | 8t @ 40°C)    | LT 15                            |

Slightly soluble in cold water (LT 0.05%). Volatile Characteristics

Content = 100%; 777 gm/L.

MSDS No. 19024 Revision Date 01/11/2001 Continued on Next Page . Page Number: 5

Voletile Organio Compounds (VOCs)

Additional Properties .Alkane, isoparaffin, and Cycloalkane Hydrocarbons Content = GT 99 Wt.% (ASTM D-1319);

C9-C11 Aromatic Hydrocarbon Content = LT 1 WL % (ASTM D-1319);

Average Density at 80°F = 6.476 lbs/gsl. (ASTM D-2161); Aniline Cloud Point Temperature = 155°F (88°C) (ASTM D-611);

Kauri-Butenol (KB) Value = 33 (ASTM D-1133); Dry Point Temperature = 983°F (195°C) (ASTM D-86); Eveporation Rate = 0.20 when n-Butyl acetate = 1.0;

Heat Value = 19,784 Btu.

#### SECTION 10: STABILITY AND REACTIVITY

Chemical Stability

Hazardous Polymertzation Not expected to occur.

A 1819 1 111

5 5 6 5 6 6

Conditions to Avoid

Keep away from extreme heat, strong acids, and strong exidizing conditions.

Meterials incompetibility

Strong acids, sikalise, and oxidizers such as liquid chlorine, other halogens, hydrogen peroxide, and oxygen.

**Hazardous** 

Decomposition Products

No substances are readily identified from composition; but, no degradation data is available.

#### SECTION 11: TOXICOLOGICAL INFORMATION

For other health-related information, refer to the Emergency Overview on Page 1 and the Hezarde Identification in Section 3 of this MSDS.

**Toxicity Data** 

Stockerd Solvent or Mineral Spirite:

ORAL (LD50): Acute: GT 34,600 mg/kg [Rat],

GAS (LC50): Acute: GT 21,400 mg/m3 for 4 hours [Ret]. DERMAL (LD50); Acute: 15,400 mg/kg [Rebbit].

n-Nonane:

GAS (LC50): Acute: 3,200 ppm for 4 hours [Rat].

INTRAVENOUS (LD50):

Acute: 216 mg/kg [Mouse].

Stoddard Solvent or Mineral Spirits is a mild to moderate eye inflant and a skin and respiratory tract inflant. Human volunteers exposed to an airporne concentration of 400 ppm experienced no ill effects. Saturated vapors in air (or AP 8,200 mg/m³) are below the LC50 level in rats.

Based upon laboratory animal studies, repeated direct epplication of Stoddard Solvers to the skin can produce defetting dermatitis, kidney damage, and changes in blood-forming capacity. Rate developed kidney damage and elevated blood urea nitrogen levels when exposed to a concentration of 1.9 mg/L for 65 days, The kildney damage in rate appeared to involve both the tubules and glorrieruli, but only occurred in males; so these effects may not be pertinent to humans. Male rats exposed to airborne concentrations of 100, 150, and 1,500 ppm for 8 hours per day, 5 days per week for 90 days did not develop any functional or histological signs of nucrotoxicity. Stoddard Solvent and Mineral Spirits were not mutagenic in the Salmonella/microsome (Amea) assay, the in-vivo mouse bone marrow cell civromosome abberations assay, and the in-vivo rat sister chromatid exchanges assay.

Rate inhaling n-monane et en airbome concentration of 1,500 ppm for 7 days displayed mild tremore and loss of coordination. Inhalation of 1,800 ppm for 6 hours per day for 90 days showed snims! weight loss or decreased weight gain and changes in the structure of their salivary glands. And, liver damage and an altered response to drugs were seen in rats given n-nonane for 2 to 7 days.

#### SECTION 12: ECOLOGICAL INFORMATION

**Ecotoxicity** 

Ecological effects testing has not been conducted on this material. If spilled, this naphthe, its storage tank water bottoms and sludge, and any contaminated soil or water may be hazardous to human, animal, and aquetic #fe.

Using Rainbow Trout (Oncornynchus mykisa), similar naphthas showed a 96-hour TLm (Median Toxic Limit) from 10 ppm to 20 ppm in ambient saltwater. 24-hour TLms resulted in 2,990 ppm and 200 ppm when using Bluegili Sunfish (Lepomis macrochirus) and juvenile American Shad (Squalius caphalus), respectively. Based upon actual split incident investigations, similar reprintes have been shown to bloaccumulate in tissues of various fish from a 1 ppm to 10 ppm levels.

MSOS No.

19024

Raylsion Otto

01/11/2001

Continued on Next Page

1. 526 - 538 5

Page Number: 6

and the second of the second o

#### Environmental Pate

This naphtha is potentially toxic to freshwater and saltwater ecosystems. It will normally float on water with its lighter components evaporating rapidly. In stagnant or slow-flowing waterways, a naphtha hydrocarbon layer can cover a large surface area. As a result, this covering layer might limit or eliminate natural atmospheric oxygen transport into the water. With time, if not removed, oxygen depletion in the waterway might be enough to cause a fish kill or create an anaerobic environment. This coaling action can also be hermful or fatal to plankton, algae, equatic life, and water birds. Additionally, potable water and boiler feed water systems should NEVER be allowed more than 5 ppm contamination from this meterial.

For additional acological information concerning components of this product, users should refer to the Hazardous Substances Data Bank® and the Oil and Hezardous Materials/Technical Assistance Data System (OHM/TADS) maintained by the U.S. National Library of Medicine. (See Section 2 for components.)

#### SECTION 13: DISPOSAL CONSIDERATIONS

nico Medianggapa keenin ninggapaga Hazard characteristic and regulatory waste stream classification can change with product use. Accordingly, it is the responsibility of the user to determine the proper storage, transportation, treatment and/or disposal methodologies for spent materials and residues at the time of disposition.

make the outside of

Meximize material recovery for rause or recycling. If spilled material is introduced into a wastawater treatment system, chemical and biological oxygen demand (COD and BOD) will likely increase. This material is biodegradable if gradually exposed to microorganisms, preferably in an aerobic environment. In sewage-seeded wastewater, at or below concentrations of 0.2 vol.% of this naphtha, there is little or no effect on bio-coodation and/or digestion. However, at 1 vol.%, it doubles the required digestion period. Higher concentrations interfere with floc formation and studge settling and also plug filters or exchange bads. Vapor emissions from a bio-oxidation process contaminated by this material might prove to be a potential health hazard

Recovered non-usable material may be regulated by US EPA as a hazardous waste due to its ignitibility (D001) characteristica. In addition, conditions of use may cause this material to become a hazardous waste, as defined by Federal or State regulations. It is the responsibility of the user to determine if the material is a RCRA "nazardous weste" at the time of disposal. Transportation, treatment, storage, and disposal of waste material must be conducted in accordance with RCRA regulations (see 40 CFR Parts 260 through 271). State and/or local regulations might be even more restrictive. Contact the RCRA/Superfund Hotline at (800) 424-8348 or your regional US EPA office for guidance concerning case specific disposal issues.

#### SECTION 14: TRANSPORT INFORMATION

DOT Status

Tris material is regulated by the U.S. Department of Transportation (DOT).

Proper Shipping Name

Petroleum distillates, n.o.s. (Nonanes)

This product has a flash point temperature of between 100° and 141°F (38° to 50°C). For bulk shipments, it is classified as a DOT "Flammable Liquid". However, according to 49 CFR 173.120(b)(2) and 173.150(f)(1), this product may be recisesified as a "Combustible Liquid" and exampted from certain transportation-related requirements, such as labeling, when shipped in non-bulk "limited-quantity" containers of less than 119 gallons capacity. According to 49 CFR 173.150(f)(2) and (3), this provision does not apply to "limited-quantities" offered for or transported via vessel or aircraft or products which are defined as DOT "Marine Pollutants". It is recommended that "Flammable Liquid" products which are recissaffed be so identified on the bill-of-lading as "Combustible liquid, n.g.s. (Petroleum distiliates) or (Nonanes) with identification number "NA1993".

**Hazard Class** 

Class 3; Flammable Iquid.

Packing Group(s)

PG III

UNINA ID

UN1268

Reportable Quantity

There are no Reportable Quantity (RQ) substance components in this product which require DOY HAZMAT bili-of-lading display.

Placerda



Emergency Response Guide No. 128

HAZMAT STCC No.

49 102 56

MARPOL III Status

Not a DOT "Marine Poliutant" per 49 CFR 171.8.

MSD6 No.

19024

Revision Date

01/11/2001

Continued on Next Page

#### SECTION 15: REGULATORY INFORMATION

TSCA inventory

This product and/or its components are listed on the Toxic Substance Control Act (TSCA) inventory.

SARA 302/304

The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to Subparts 302 and 304 to submit emergency planning and notification information based on Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) for "Extremely Hazardous Substances" listed in 40 CFR

302.4 and 40 CFR 355. No components were identified.

SARA 311/312

The Superfund Amendments and Regulthorization Act of 1986 (SARA) Title III requires facilities subject to this subpart to submit aggregate information on chemicals by "Hazard Category" as defined in 40 CFR 370.2.

This material would be classified under the following hezard categories:

Fire Hazard, Acute (Immediate) Health Hazard, and Chronic (Delayed) Health Hazard.

SARA 313

This product does not contain any components in concentrations at or above de minimis levels that are listed

as toxic chemicals in 40 CFR Part 372 pursuent to the requirements of Section 313 of SARA.

CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center concerning release of quantities of "hezardous substances" equal to or greater than the reportable quantities (RQ's) fisted in 40 CFR 302.4. As defined by CERCLA, the term "hezardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically designated in 40 CFR 302.4. There are no chemical substances in this product subject

to this statute.

**CWA** 

This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (600) 424-8602.

California Proposition 65 This product is not known to contain any chemical substances which are known to the State of California to cause cancer, birth defects, or other reproductive harm, and therefore, it is not subject to requirements of California Health & Safety Code Section 25249.5.

New Jersey Right-to-Know Labei

For New Jersey labeling refer to components flated in Section 2.

Additional Regulatory Remarks Under the Federal Hazardous Substances Act, related statutes, and Consumer Product Safety Commission regulations, as defined by 16 CFR 1500.14(b)(3) and 1500.83(a)(13): This product contains "Petroleum Distillates" which may require special labeling if distributed in a manner intended or packaged in a from suitable for use in the household or by children. Precautionary label dislogue should display the following: Contains Petroleum Distillates! May be harmful or fatal if swallowed: Keep Out of Reach of Children!

Under Section 12(b) of TSCA: Because it might contain detectable amounts of 1,3,5-Trimethylbenzane (Mealtylane) [CAS No. 105-67-5], this product might be subject to US EPA's one-time only per country export notification requirements.

#### SECTION 16: OTHER INFORMATION

Refer to the top of Page 1 for the HMIS and NFPA Hazard Ratings for this product.

REVISION INFORMATION

Version Number

3.0

Revision Date

01/11/2001

Print Date

Printed on 01/15/2001.

ABBREVIATIONS

AP = Approximately

EQ = Equal > = Greater Than

< = Less Then NA = Not Applicable

ND = No Deta NE = Not

ACGIH = American Conference of Governmental Industrial Hygienists

AJHA = Arrenican Industrial Hygiene Association

IARC = International Agency for Research on Cencer

NTP = National Toxicology Program

NIOSH = National institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration
HMIS = Hazardous Materials Information System

NPCA = National Paint and Coating Manufacturers Association NFPA = National Fire Protection Association

EPA = Environmental Protection Agency

MSDS No.

19024

Revision Date

01/11/2001

Continued on Next Page

#### **Material Safety Data Sheet**

for

#### **Dolomite**

#### Section I - Material Description

Manufacturer's name and address:

Ash Grove Cement Company

13939 N. Rivergate Blvd. Portland, OR 97203

**Emergency Telephone Number:** 

(412) 553-4001 - ALCOA

(503) 286-1677 - ASH GROVE

Technical:

(412) 553-2881 - ALCOA

Chemical Name & Formula: Dolomite; Mg CO<sub>3</sub>, Silicon Dioxide, SiO<sub>2</sub>

Other Designation: None

CAS No: Dolomite (16389-88-1); Silicon Dioxide (7631-86-9)

Manufacturer: Northwest Alloys, P.O. Box 115, Addy, WA 99101

Product Use: Chemical processing

Revised: January 2003

#### Section II - Hazardous Ingredients and Occupational Exposure Limits

(<1%)TWA in mg/mg<sup>3</sup> % Typical ACGIH TLV **OSHA PEL** 

CaCO<sub>3</sub> - MgCO<sub>3</sub>

97-100

Amorphous silica 10 6

0 - 3

SiO<sub>2</sub>  $H_2O$ 

Remainder

LD found for oral route of administration: SiO<sub>2</sub> (amorphous) 3160 mg/kg

#### Section III - Physical Data

Physical Form: Solid Boiling Temperature: NA

Freeze-Melt Temperature: Not determined

Vapor Pressure: NA

Vapor Density: (Air = 1) NA

Evaporation Rate: NA

Specific Gravity: Not determined

Density: 2.87 g/cc Water Solubility: Slight

pH: 9.60 [50 % weight (gm) to water volume (ml)]

Color: Grayish-white

Odor: None

Odor Threshold: NA

Coefficient of Water/Oil Distribution: Not determined

#### Section IV - Fire and Explosion Data

Flashpoint: NA

Auto-Ignition Temperature: NA

Flammability Limits in Air/Upper/Lower: NA

Product is non-combustible. Not an explosion hazard. Use fire extinguishing agent suitable for the surrounding fire. Wear NIOSH approved, self-contained breathing apparatus and protective clothing when appropriate.

#### Section V - Reactivity Data

Material is stable under normal conditions of use, storage, and transportation.

#### Section VI - Health Hazard Information

This product has not undergone testing for either acute or chronic toxic effects. However, based on its chemical composition, we would expect it to be a low health risk by inhalation so long as the occupational exposure limits specified under Section II are met.

#### Section VII - Spill, Leak, and Disposal Procedures

Use dry cleanup procedures; avoid dusting. Collect in containers or bags.

If reuse or recycling is not possible, material may be disposed of at a sanitary landfill.

RCRA Hazardous Waste No. Not Federally Regulated

# Section VIII - Special Protection and Precautions Use with adequate ventilation to meet exposure limits as listed in Section II. Where the exposure limit is or may be exceeded, use NIOSH approved respiratory protections. Select appropriate respirator (dust respirator, etc.) based on the concentrations of actual or potential airborne contaminants present. Section IX - Regulatory Information

Chemical substance components have been reported to the EPA Office of Toxic Substances in accordance with the requirements of the Toxic Substances Control Act (Title 40 CFR Part 710).

For purposes of SARA III reporting, this substance contains no ingredients listed on CERCLA, Extremely Hazardous, or 313 lists.

The reportable chemical substances in this product are regulated by the OSHA Hazard Communication Standard (29CFR 1910.1200) solely because they are listed by ACGIH. However, they do not fit any of the five proposed hazard categories under SARA Sections 311,312.

D.O.T. Shipping Name, Hazard Class, I.D. No. (if applicable) Not Regulated Canadian TDG Hazard Class & PIN - Not Regulated

#### Section X - References

U.S. Dept. Of Health and Human Services, NIOSH: Registry of Toxic Effects of Chemical Substances, 1985-86 Edition

Sax, N. Irving: <u>Dangerous Properties of Industrial Materials</u>, Van Nostrand Reinhold Co. Inc, 1984

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

CUSTOMER: LC013815 ORDER #: 0114@ BATCH #: 031490021 STICKER #: 031490121 ZONE #: 09 BARCODE #: 9611019095150211312732 PRODUCT NAME: CERTI-SLIDE AERO MATERIAL SAFETY DATA SHEET: CERTI-SLIDE AERO Page: 1 30-000000--529J ) DATE OF ISSUE SUPERSEDES 1/24/2003 4/19/2002 SECTION I - GENERAL INFORMATION Chemical Name & Synonyms CERTI-SLIDE AERO Chemical Family: AQUEOUS GRAPHITE MIXTURE Formula Mixture --> X CERTIFIED LABS, DIV. OF NCH CORP. Address: BOX 152170 IRVING, TEXAS 75015 Prepared By: Product Code Number Emergency Phone Number C Williamson/Chemist 529J 800-424-9300 SECTION II - HAZARDOUS INGREDIENTS THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS Chemical Name (Ingredients) ALKALI SILICATE Hazard IRRITANT TLV N/E PEL N/E <u>stel</u> N/E <u>CAS #</u> TRADE SECRET N/E 2 3 MG/M3 2 1606 PPM 2 N/E 2 2 MG/M3 1 2500 PPM 1 GRAPHITE 7782-42-5 FLAM/ASPHY N/E 74-98-6 ISOBUTANE FLAM/ASPHY N/E 75-28-5 SECTION III - PHYSICAL DATA Boiling Point (F): Specific Gravity (H20=1): 1.08 Vapr Tressure (MM HG): 17.99 Color: DK GRAY TO BLACK maity (Air=1): 1.4 Odor: AMMONTA Clarity: PH @ 100% : 10.8 OPAQUE. % Volatile by Volume: >85 Evaporation Rate (BU A/C=1): 0.72 M20 Solubility: APPRECIABLE Viscosity: SLIGHT VISCOUS SECTION IV - FIRE AND EXPLOSION HAZARD Flash Point Flammable Limits LEL UKI. >200°F / SETAFLASH PROPANE/ISOBUTANE 1.8% 9.5% Extinguishing Media X <--Foam X <--Alcohol Foam X <--Foam X <--CO2 X <--Dry Chemical X <--Water Sorav <--Other Special Fire Fighting Procedures:
FIREFIGHTERS SHOULD WEAR A SELF-CONTAINED EREATHING APPARATUS AND FULL PROTECTIVE SEAR. EXTINGUISHING MEDIA SHOULD BE CHOSEN BASED ON THE NATURE OF THE SURROUNDING FIRE. COOL FIRE-EXPOSED CONTAINERS WITH WATER SPRAY TO PREVENT BURSTING. FLAME EXTENSION IS 0 INCHES, BURNBACK IS 0 INCHES. Aerosol Level (NFPA 30B): 1 NFFA 704 Hazard Rating (0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme)
1 <--Health 1 <--Flammability 0 <--Instability <--Special SECTION V - HEALTH HAZARD DATA Threshold Limit Value: NOT ESTABLISHED FOR MIXTURE. SEE SECTION II. Effects of Overexposure: -Acute (Short Term Exposure) SKIN CONTACT: MAY CAUSE IRRITATION SEEN AS STUCHING AND REDNESS. PRODUCT MAY BE ABSORBED THROUGH THE SKIN IN HARMFUL AMOUNTS. EYE CONTACT: MAY CAUSE IRRITATION SEEN AS STUNGING, TEARING AND REDNESS.
INHALATION: MAY CAUSE RESPIRATORY IRRITATION SEEN AS COUGHING AND SNEEZING. INGESTION: MAY CAUSE IRRITATION WITH POSSIBLE NAUSEA, VOMITING AND DIARRHEA. -Chronic (Long Term Exposure)
CHRONIC EFFECTS KNOWN, MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE ARE PRE-EXISTING RESPIRATORY AND SKIN CONDITIONS SUCH AS ASTHMA, EMPHYSEMA AND ATITIS. TARGET ORGANS: NONE KNOWN.

X <--Absorption

<--Ingestion

<--Inhalation

Primary Routes of Entry:

Emergency and First Aid Procedures:
-Inhalation:

#### MATERIAL SAFETY DATA SHEET: CERTI-SLIDE AERO

#### SECTION X - STORAGE AND HANDLING INFORMATION (Continued)

#### SECTION XI - REGULATORY INFORMATION

Chemical Name None

CAS Number

Upper % Limit

Tho \_\_\_\_\_\_gredients listed above are subject to the reporting requirements of 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Please call 1-800-527-9919 for additional information if you are a California customer. This MSDS is not intended for users in the state of California.

#### SECTION XII - REFERENCES

- 1. THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS AND BIOLOGICAL EXPOSURE INDICES, ACGIH, 2002.
- 1. OSHA PEL.

  3. REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES, CCINFODISC, 2002.

4. VENDOR'S MEDS.

ALL THE COMPONENTS OF THIS PRODUCT ARE IN COMPLIANCE WITH THE TOXIC SUBSTANCES CONTROL ACT (TSCA) AND ARE EITHER LISTED ON THE TSCA INVENTORY OR OTHERWISE EXEMPTED FROM LISTING.

TRR:IRRITANT, PLAM/FLAMM:FLAMMABLE, COMB:COMBUSTIBLE, CORR:CORROSIVE CARC:CARCINOGENIC, TOX:TOXIC, N/A:NOT APPLICABLE, N/E:NOT ESTABLISHED, COC:CLEVELAND OPEN CUP, PMCC:PENSKY-MARTIN CLOSED CUP, TCC:TAGLIABUE CLOSED CUP,
LEL:LOWER EXPLOSION LIMIT, UEL:UPPER EXPLOSION LIMIT, NFPA:NATIONAL FIRE PROTECTION ASSOCIATION, IARC:INTERNATIONAL AGENCY FOR THE RESEARCH ON CANCER, NTP:NATIONAL TOXICOLOGY PROGRAM, OSHA:OCCUPATIONAL SAPETY & HEALTH ADMINISTRATION, ACGIH:AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS, TLV:THRESHOLD LIMIT VALUE, PEL:PERMISSIBLE EXPOSURE LIMIT, STEL:SHORT-TERM EXPOSURE LIMIT, MAD.HILD, MOD.HODERATE, SEV:SEVERE,
MUT.MUTAGENIC, ASPHYX:ASPHYXIANT, FNOS:PARTICULATES (INSCLUBLE) NOT OTHERWISE SPECIFIED, SDT:STANDARD DRAIZE TEST, ORL:ORAL, IHL:INHALATION, HMN: HUMAN

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

CERTIFIED LABS, DIV. OF NCH CORP. assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the product in a manner not recommended on the product label. Users assume all risks associated with such unrecommended use, storage, or disposal of the



# **Material Safety Data Sheet**

| Common Name   | MOLUB-ALLOY 491-C DRY FILM LUBRICANT                                                           | Code             | 75060-AH             |
|---------------|------------------------------------------------------------------------------------------------|------------------|----------------------|
| Supplier      | CASTROL INDUSTRIAL NORTH AMERICA INC.<br>1001 WEST 31ST STREET<br>DOWNERS GROVE, IL 60515-1280 | Validation Date  | 12/12/2001.          |
| Synonym       | Product Information: 630 241-4000  Not available.                                              |                  |                      |
| Trade name    | MOLUB-ALLOY IS REGISTERED IN THE U.S. PATENT AND TRADEMARK OFFICE.                             | Responsible Name | Product Stewardship  |
| Material Uses | Not available.                                                                                 |                  | MTREC (800) 424-9300 |
| Manufacturer  | CASTROL INDUSTRIAL NORTH AMERICA INC<br>1001 WEST 31ST STREET<br>DOWNERS GROVE, IL 60515-1280  | Emergency        | _                    |

| Name                         | CAS#         | % by Weight | Exposure Limits                                                                                                                                                                                                                                               |
|------------------------------|--------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) MOLYBDENUM SULFIDE (MOS2) | 1317-33-5    | 20-25       | ACGIH TLV (United States, 2000). TWA: 10 mg/m³ OSHA Final Rule (United States, 1989) TWA: 10 mg/m³                                                                                                                                                            |
| ?) PROPRIETARY THICKENER     | Access # 234 | 1-5         | ACGIH (United States). TWA: 10 mg/m³ OSHA (United States). TWA: 15 mg/m³                                                                                                                                                                                      |
| 3) GRAPHITE                  | 7782-42-5    | 1-5         | ACGIH (United States, 1994).  TWA: 2 mg/m³ Form: DustOSHA Final Rule (United States, 1989).  TWA: 2.5 mg/m³ Form: Respirable dust OSHA (United States).  TWA: 3 mg/m³ Form: Respirable fractionOSHA (United States).  CEIL: 3 mg/m³ Form: Respirable fraction |

| Section 3. Hazard                                                     | s Identification                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Physical State and<br>Appearance<br>Ammoniacal. Odor<br>Black. Paste. | Solid.                                                                                                                                                                                                                                                          |
| Emergency Overview                                                    | CAUTION!  MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.  Avoid contact with eyes, skin and clothing. Do not breathe vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Do not ingest.  Not available. |
| Routes of Entry                                                       | Absorbed through skin. Eye contact. Inhalation. Ingestion.                                                                                                                                                                                                      |

#### MOLUB-ALLOY 491-C DRY FILM LUBRICANT

Page: 2/7

Potential Acute Health Effects

Eyes Moderately irritating to the eyes.

Skin Moderately irritating to the skin.

Inhalation Moderately irritating to the respiratory system.

Ingestion Harmful if swallowed.

No additional remark.

Potential Chronic Health

CARCINOGENIC EFFECTS: Not known to be carcinogen.

Effects

MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available.

**Medical Conditions** 

Aggravated by Overexposure:

Repeated or prolonged exposure is not known to aggravate medical condition.

Overexposure /Signs/Symptoms

Not available.

See Toxicological Information (section 11)

| Eye Contact        | Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water fo at least 15 minutes. Cold water may be used. Get medical attention.                                                                                                |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Skin Contact       | In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medica attention.                                                         |
| Inhalation         | If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen Get medical attention.                                                                                                                                  |
| Ingestion          | Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to ar unconscious person. If large quantities of this material are swallowed, call a physician immediately. Looser tight clothing such as a collar, tie, belt or waistband. |
| Notes to Physician | Not available.                                                                                                                                                                                                                                                                 |

| Section 5. Fire Fighting Measures                   |                                                                                                                                                      |  |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Flammability of the Product                         | May be combustible at high temperature.                                                                                                              |  |
| Autoignition Temperature                            | Not available.                                                                                                                                       |  |
| Flash Points                                        | Not available.                                                                                                                                       |  |
| Flammable Limits                                    | Not available.                                                                                                                                       |  |
| Products of Combustion                              | These products are carbon oxides (CO, CO2), sulfur oxides (SO2, SO3). Some metallic oxides Molybdenum(Mo) Ammonia.                                   |  |
| Fire Hazards in Presence of<br>Various Substances   | Not available.                                                                                                                                       |  |
| Explosion Hazards in Presence of Various Substances | Non-explosive in presence of open flames, sparks and static discharge, of shocks, of heat.                                                           |  |
| Fire Fighting Media and Instructions                | SMALL FIRE: Use DRY chemical powder.  LARGE FIRE: Use water spray, fog or foam. Do not use water jet.                                                |  |
|                                                     | Water or foam may cause frothing. Cool containers with flooding amounts of water from as far a distance as possible. Wear full protective equipment. |  |
| Protective Clothing (Fire)                          | Be sure to use an approved/certified respirator or equivalent.                                                                                       |  |

#### Continued on Next Page

#### **MOLUB-ALLOY 491-C DRY FILM LUBRIÇANT**

Page: 3/7

Special Remarks on Fire Hazards

Products of Combustion: Carbon Dioxide (CO2)., sulfur oxides (SO2, SO3...), Molybdenum(Mo), Ammonia.. NFPA health hazard rating of 2 is assigned due to the toxicity of thermal decomposition products (oxides of sulfur); otherwise, the material itself warrants a health hazard rating of 1.

Special Remarks on Explosion Not available. Hazards

#### Section 6. Accidental Release Measures

Small Spill and Leak

Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary, neutralize the residue with a dilute solution of acetic acid. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill and Leak

Use a shovel to put the material into a convenient waste disposal container. If necessary, neutralize the residue with a dilute solution of acetic acid. Do not allow to enter drains or watercourses.

#### Section 7. Handling and Storage

Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. Do not ingest.

Keep container tightly closed. Keep container in a cool, well-ventilated area. Avoid contact with strong oxiders, excessive heat, sparks or open flame. Empty containers may contain harmful, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld. reuse or dispose of containers unless adequate precautions are taken against these hazards.

#### Section 8. Exposure Controls, Personal Protection

Engineering Controls

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, furne or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

#### Personal Protection

Eyes Safety glasses with side shields.

Body Synthetic apron.

Wear appropriate protective clothing to prevent skin contact. Ensure that eyewash station and safety shower is proximal to the work-station location.

Respiratory Wear appropriate respirator when ventilation is inadequate.

Hands Impervious gloves.

Protective gloves should be worn during handling.

Feet Not applicable.

Protective Clothing (Pictograms)



a Large Spill

Personal Protection in Case of Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Product Name** 

**Exposure Limits** 

#### Continued on Next Page

| MOLUB-ALLOY 491-C DRY FILM<br>LUBRICANT | Page: 4/7                                                     |
|-----------------------------------------|---------------------------------------------------------------|
| 1) MOLYBDENUM SULFIDE (MOS2)            | ACGIH TLV (United States, 2000).                              |
|                                         | TWA: 10 mg/m³ OSHA Final Rule (United States, 1989).          |
|                                         | TWA: 10 mg/m³                                                 |
| 2) PROPRIETARY THICKENER                | ACGIH (United States).                                        |
|                                         | TWA: 10 mg/m <sup>3</sup> OSHA (United States).               |
|                                         | TWA: 15 mg/m <sup>3</sup>                                     |
| 3) GRAPHITE                             | ACGIH (United States, 1994).                                  |
|                                         | TWA: 2 mg/m³ Form: DustOSHA Final Rule (United States, 1989). |
|                                         | TWA: 2.5 mg/m³ Form: Respirable dust                          |
| ·                                       | OSHA (United States).                                         |
|                                         | TWA: 3 mg/m³ Form: Respirable fractionOSHA (United States).   |
| ,                                       | CEIL: 3 mg/m³ Form: Respirable fraction                       |

| Section 9. Physical a            | nd Chemical Properties                                           |            |                                       |      |
|----------------------------------|------------------------------------------------------------------|------------|---------------------------------------|------|
| Physical State and<br>Appearance | Solid.                                                           | Odor       | Ammoniacal. Odor                      |      |
| Boiling/Condensation Point       | Not available.                                                   | Taste      | Not available.                        |      |
| Melting/Freezing Point           | Not available.                                                   | Color      | Black. Paste.                         |      |
| pH Concentrate                   | 11.5 [Basic.]                                                    | -          | · · · · · · · · · · · · · · · · · · · | ,100 |
| pH Dilution % and Value          | Not available.                                                   |            |                                       |      |
| Critical Temperature             | Not available.                                                   |            |                                       |      |
| Specific Gravity                 | 1.3 to 1,5 (Water = 1)                                           |            |                                       |      |
| Vapor Pressure                   | Not available.                                                   |            |                                       |      |
| Vapor Density                    | Not available.                                                   |            |                                       |      |
| Volatility                       | Not available.                                                   |            |                                       |      |
| Odor Threshold                   | Not available.                                                   | 7.45. 41   |                                       |      |
| Evaporation Rate                 | Not available.                                                   |            |                                       |      |
| VOC                              | Not available.                                                   | VOC Method | Not available.                        |      |
| Viscosity                        | Not available.                                                   |            | , ,                                   |      |
| Dispersion Properties            | See solubility in water.                                         |            |                                       |      |
| Solubility                       | Easily soluble in hot water.<br>Partially soluble in cold water. |            |                                       |      |
| Physical Chemical Comments       | Not available.                                                   |            |                                       |      |
|                                  | · · · · · · · · · · · · · · · · · · ·                            | <u> </u>   |                                       |      |

#### MOLUB-ALLOY 491-C DRY FILM LUBRICANT

Page: 5/7

| Section 10. Stability and Reactivity       |                                                                             |  |
|--------------------------------------------|-----------------------------------------------------------------------------|--|
| Stability and Reactivity                   | The product is stable.                                                      |  |
| Conditions of Instability                  | Avoid excessive heat.                                                       |  |
| Incompatibility with Various<br>Substances | Reactive with oxidizing agents, metals, acids.                              |  |
| Hazardous Decomposition<br>Products        | carbon oxides (CO, CO2), sulfur oxides (SO2, SO3), Molybdenum(Mo), Ammonia. |  |
| Hazardous Polymerization                   | Will not occur.                                                             |  |

| Toxicity to Animals                                  | LD50: Not available.<br>LC50: Not available.                                                                                                                   |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chronic Effects on Humans                            | CARCINOGENIC EFFECTS: Not known to be carcinogen. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. |
| Other Toxic Effects on<br>Humans                     | Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation (lung irritant).                                                        |
| Special Remarks on Toxicity to Animals               | Not available.                                                                                                                                                 |
| Special Remarks                                      | No additional remark.                                                                                                                                          |
| -Special Remarks on Other<br>Toxic Effects on Humans | No additional remark.                                                                                                                                          |

| Ecotoxicity                                          | Not available.                                                                                                               |  |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--|
| BOD and COD                                          | Not available.                                                                                                               |  |
| Biodegradable/OECD                                   | Not available.                                                                                                               |  |
| Mobility                                             | Not available.                                                                                                               |  |
| Products of Degradation                              | These products are carbon oxides (CO, CO2) and water, sulfur oxides (SO2, SO3). Some metallic oxides Molybdenum(Mo) Ammonia. |  |
| Toxicity of the Products of Biodegradation           | Not available.                                                                                                               |  |
| Special Remarks on the<br>Products of Biodegradation | Not available.                                                                                                               |  |

#### Section 13. Disposal Considerations

Waste Information Type: Non-hazardous chemical waste.

Location: not available Classification: not available

Disposal.: Waste must be disposed of in accordance with federal, state and local environmental control

regulations.

Storage: not available Recycling: not available

Wear appropriate protective clothing to prevent skin contact. Eliminate all ignition sources. Stop leak if without risk. Do not allow to enter drains or watercourses. Absorb with an inert material and put the spilled material in an appropriate waste disposal.

#### Continued on Next Page

| MOLUB-ALLOY 491-C DRY FILM<br>LUBRICANT |                   | Page: 6/7 |
|-----------------------------------------|-------------------|-----------|
| RCRA Waste Code(s)                      |                   |           |
| Waste Stream                            | Not available.    |           |
| Consult your local or reg               | onal authorities. |           |

| DOT Classification                  | - Not a DOT controlled material (United States). |
|-------------------------------------|--------------------------------------------------|
|                                     | Not regulated.                                   |
| Marine Pollutant                    | Not pollutant.                                   |
| Special Provisions for<br>Transport | NOT REGULATED.                                   |
| ADR/RID Classification              | Not available.                                   |
| IMO/IMDG Classification             | Not available.                                   |
| ICAO/IATA Classification            | Not available.                                   |

#### Section 15. Regulatory Information

| U.S. Federal Regulations | TSCA 4(a) final test rules: ISOPROPYL ALCOHOL TSCA 8(d) H and S data reporting: ISOPROPYL ALCOHOL: 1986 TSCA 12(b) one time export: ISOPROPYL ALCOHOL                                                                                                                                                                                            |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | SARA 302/304 emergency planning and notification: No products were found.                                                                                                                                                                                                                                                                        |
|                          | SARA 311/312 MSDS distribution - chemical inventory - hazard identification: MOLUB-ALLOY 491-C DRY FILM LUBRICANT: immediate health hazard.                                                                                                                                                                                                      |
|                          | SARA 313 toxic chemical notification and release reporting. No products were found.                                                                                                                                                                                                                                                              |
|                          | Clean Water Act (CWA) 307: No products were found. Clean Water Act (CWA) 311: No products were found. Clean air act (CAA) 112 accidental release prevention: No products were found. Clean air act (CAA) 112 regulated toxic substances: No products were found. Clean air act (CAA) 112 regulated flammable substances: No products were found. |
| State Regulations        | Pennsylvania RTK; GRAPHITE, NATURAL (generic environmental hazard) Massachusetts RTK; MOLYBDENUM SULFIDE; GRAPHITE, NATURAL New Jersey: MOLYBDENUM SULFIDE California prop. 65: No products were found.                                                                                                                                          |
| Inventory Lists          | TSCA 8(b) inventory: All components of this product are listed on (or meet the exemption requirements of) the applicable inventory list.                                                                                                                                                                                                         |
|                          | CEPA DSL: All components of this product are listed on (or meet the exemption requirements of) the applicable inventory list.                                                                                                                                                                                                                    |
|                          | Australia (NICNAS): One or more of the materials contained in this product may not appear on the applicable inventory list. Please consult the manufacturer for additional information.                                                                                                                                                          |
|                          | Korea (TCCL): One or more of the materials contained in this product may not appear on the applicable inventory list. Please consult the manufacturer for additional information.                                                                                                                                                                |
|                          |                                                                                                                                                                                                                                                                                                                                                  |

#### MOLUB-ALLOY 491-C DRY FILM LUBRICANT

Page: 7/7

inventory list. Please consult the manufacturer for additional information.

MITI: One or more of the materials contained in this product may not appear on the applicable inventory list. Please consult the manufacturer for additional information.

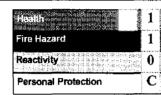
EINECS: One or more of the materials contained in this product may not appear on the applicable inventory list. Please consult the manufacturer for additional information.

#### Section 16. Other Information

Label Requirements

MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

Hazardous Material Information System (U.S.A.)



National Fire Protection Association (U.S.A.)



References

Not available.

Other Special Considerations

No additional remark.

Validated by Product Stewardship on 12/12/2001.

Printed 12/12/2001,

CHEMTREC (800) 424-9300

#### Notice to Reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.